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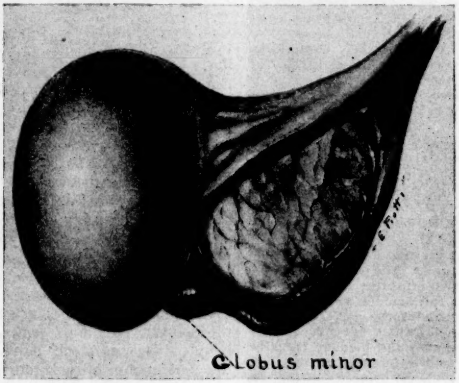
NEW ENGLAND BRANCH OF THE AMERICAN UROLOGICAL ASSOCIATION

PRESENTATION OF CASE REPORTS, SPECIMENS AND NEW INSTRUMENTS

DR. HAROLD JOHNSON, Lynn: I present to the members a series of four drawings made during an operation to fix the testicle in a young man who five weeks before had suffered from acute torsion of the left spermatic cord and rotation of the testicle. On February, 1928, at four in the morning he was aroused from sleep by severe pain in the left testicle which caused nausea, pallor and rapid pulse associated with exquisite tenderness in the testicle and cord. The boy was sixteen and gave no history or evidence of gonorrheal infection. His physician sent for me after morphine had been given with no relief and I saw him at nine the same morning. He was writhing with pain. There was moderate swelling present. The diagnosis was made of torsion of the cord and an attempt was made to untwist it which was immediately successful the pain disappearing as if by magic, and he was completely relieved. I was consulted the next day as to the possibility of its return, and upon my saying that it was possible, the father requested me to do an operation that would prevent it so that during the spring holidays on March 13th the following procedure as illustrated by these drawings was done. It consists simply in dissecting away the tunica vaginalis and anchoring the testis to the median septum by a single fine chromic gut suture until adhesions have formed which prevent future rotation.

I believe this is the first case reported where an operation has been performed after a long interval in which the patient has had no symptoms. The point of greatest interest, it seems to me, is the abnormal anatomy unaccompanied by distortion due to edema, congestion, inflammation or gangrene so frequently seen at operation which is often undertaken too late after an unrelieved attack to preserve the testicle. Drawing number three made by Miss E. Piotti of the Harvard Medical School illustrates this very well. You will observe the free suspension of the testicle and epididymis by the cord, which would easily permit rotation within the vaginal sack; also the absence of the head of the epididymis and the attachment of the attenuated body by a (mesorchium?) to the cord and testis.



DRAWING NO. 3. Showing absence of head of epididymis and a true mesorchium?

Discussion

Dr. A. L. Chute, Boston: I saw last year the marriage of that boy whose case I reported and in whom I reduced a torsion of the cord. Presumably it has not recurred. I know he was well for months afterwards. It is now a matter of fifteen years, and I fancy that he has remained well.

MALIGNANT UNDESCENDED TESTICLE

Case Report*

BY J. A. BOWEN, M.D.

THE following case is reported because of its rather infrequent occurrence, the unusual train of subjective symptoms, and also because of the difficulties encountered in diagnosis.

Mr. R. M. F., aged 44, an engineer by occupation, entered the Peter Bent Brigham Hospital complaining of recurrent lower abdominal pain and of an undescended testicle on the right side. Family History and Previous History were irrelevant.

The patient dates the onset of his present illness from two years ago. At that time he stepped down from a high step, jarring himself somewhat, and causing considerable pain in the right groin. He was in bed for three days with rather severe pain in this location. Since that time he has had occasional darting pain in the right groin which shoots downward to the glans penis. One week before admission this pain recurred, but much more severe in character, radiating across and above the symphysis pubis. At the same time he noted the onset of severe dysuria. He had had no previous urinary symptoms; no pyuria or hematuria.

Physical examination was essentially negative except for an undescended testicle on the right and an almond sized mass in the right inguinal canal near the external ring, which the patient believed was the testicle. His blood pressure was 90 systolic and 55 diastolic. There was slight tenderness on deep palpation over the bladder.

Because of his urinary symptoms a cystoscopic examination was attempted. The instrument was passed easily through the prostatic portion of the urethra, but just within the bladder an obstruction was met over which the cystoscope could be passed only by marked depression of its external end. A large, rounded mass protruding into the bladder from behind and almost occluding the internal meatus, was seen. This mass was medially placed, lifting the trigonal area upward. With the instrument in the urethra, a rectal examination revealed a large, smooth, globular mass just beyond the prostate, and in the mid-line. This mass was not easily movable from below and was slightly tender. A cystogram showed a normal bladder outline.

A barium enema showed an apparently normal rectum and colon. Urine and blood examinations were normal.

Here is a patient, then, with an undescended testicle, who has reached the age of forty-four, in an active and productive married life, having no particular illnesses or complaints until two years before seen. As we have said, his first symptom was one of pain following a trifling injury, and probably not connected particularly with his real malady. The reason for his appearance was one of urinary difficulties, also not connected directly in the patient's mind with his undescended testicle. He planned, however, to have this "fixed up" while he was confined to the hospital. After examination, an impression of an extravesical mass causing urinary obstruction and probably associated with changes in the undescended testicle, was made, and an exploratory operation advised.

On the fifth day following admission this was done under gas ether anaesthesia through a lower mid-line incision. The bladder was opened and explored. The mass felt per rectum and seen through the cystoscope was palpated. It was freely movable, entirely confined to the peritoneal cavity, rather movable in outline, and firm in consisteney. Exploration of the right extraperitoneal fossa failed to reveal cord or testicle. It was thought wise to stop the operation here without opening the peritoneum, and the wound was closed.

The patient made a satisfactory, but rather prolonged convalescence. Three weeks after operation a cystoscopic examination was again attempted, but unsuccessfully, due to the mass which had now markedly increased in tenderness. The following day he was again operated upon under gas ether anaesthesia by a prolongation of the original incision upward. A large oval and rather smooth mass was removed from the pelvis. This mass completely filled the true bony pelvis, was freely movable and adherent to the peritoneum only in one small area. Posteriorly it was attached at about the bifurcation of the right iliac artery by a short stalk about the size of a man's finger, the gross structure of which was that of the spermatic cord. This cord was divided between ties, and the tumor removed. No suspicious glands were felt about the great vessels. The patient made rather a smooth convalescence and left the hospital on October 7th, following two regional deep x-ray treatments.

The pathological description of the specimen is as follows:

Gross: An irregular, oval shaped, uniform mass of tissue extremely well encapsulated and weighing 700 grams. It is 12 x 8 cms. in diameter. (Fig. 1.) In many areas there is a somewhat nodular formation, and on one surface is a roughly triangular mass about the size of a hen's egg, which is thought to be the

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epididymis. Over the surface are numerous tortuous and distended blood vessels. The whole is firm and on cross section reveals a uniform, pinkish gray appearing surface, showing a few punctate hemorrhagic areas too small to be significant. Impression is that this is an embryoma of the testis.

Microscopic: Representative sections show rapidly growing tumor consisting of poorly differentiated cells and scanty stroma and of an irregular architecture. The cells are as a rule large, round or polyhedral, and surround a large, vesicular, hyperchromatic nucleus within which mitotic figures occur frequently. The cells are arranged rather diffusely in some areas, but are seen more commonly arranged in pseudo-alveoli surrounded by connective tissue stroma. This stroma is everywhere subservient to the tumor and contains numerous lymphocytes in areas. There is nowhere any evidence of teratomatous formation.

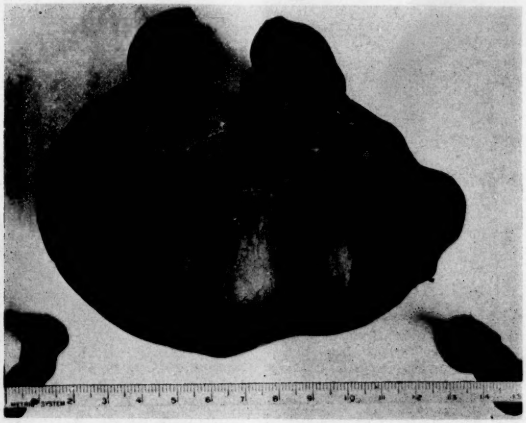
Diagnosis: Embryonal carcinoma.

This case, then, is one of a malignancy of an intra-abdominal testicle, the pathology of which differs in no way from the same condition found in testicles in the normal position.

Testicular malignancies make up about .5% of the malignancies occurring in men, and approximately 10% of these are found in the undescended organs. They are rapidly growing, fairly early metastasizing tumors, either by way of the lymph or blood channels. They usually spread first to the retroperitoneal lymph glands about the origin of the iliacs, and then to those about the kidney pedicle. They then reach the mediastinum and lungs. If they spread by the blood stream, the lung is, of course, involved earlier.

In the treatment of these growths opinion differs somewhat. Hinman of San Francisco (quoted by Eisendrath) advocates local excision and extensive removal of the retroperitoneal glands on the same side. Barringer[1] of New York feels that deep x-ray treatment probably offers the best solution, together with local excision following such treatment. Usually the local growth is removed with high separation of the spermatic cord, and deep x-ray treatment given afterward. Occasionally the retroperitoneal glands are still removed.

The prognosis of these tumors is uniformly bad, but is certainly improved since deep x-ray treatment has become of general use. Eisendrath[2] reports one case with metastasis at the external ring well four years after deep therapy was instituted. This author feels that deep therapy followed in a few weeks by local excision is probably the best treatment.



Malignant Undescended Testicle. Case of Dr. J. A. Bowen.

On the Urological Service at the Peter Bent Brigham Hospital since 1916 there have been nine cases of malignant testis. Only one of these (approximately 10%) has been in an undescended gland. Pathologically these have all been rapidly growing affairs, and all have been reported as carcinoma. One of these cases was operated on for local recurrence following orchidectomy elsewhere, two were known to have lung metastases at the time of operation, and in one invaded lymph nodes were found in the retroperitoneal space. The average age was forty-four years, and the average duration of symptoms fifteen months; the longest time being three years, and the shortest, three months. Of these cases four are still living; the one here reported, one seventeen months, one twenty months, and one twenty-five months after opera-

tion. Three are known to be dead; one in one month, one in two months, and one in eighteen months after operation. Two have been lost sight of.

REFERENCES

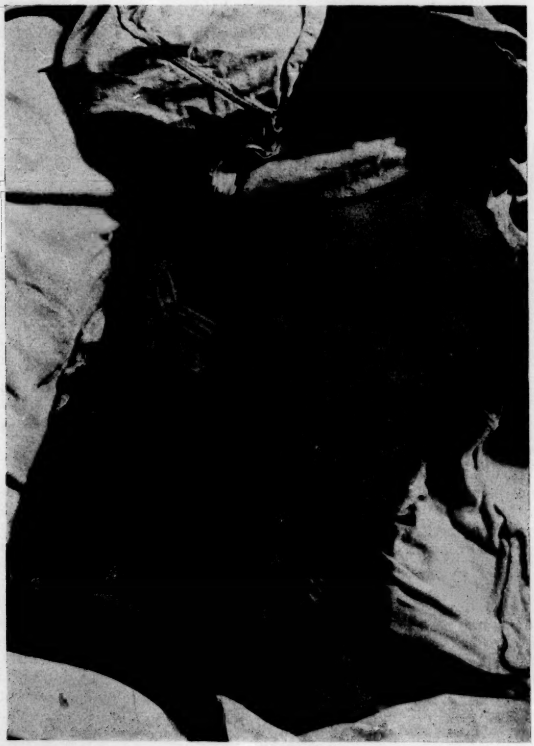
1 Barringer, B. S.: Teratoma of the Testis. Jour. Urol., 1927, Vol. 17, p. 203.

2 Eisendrath and Rolnick: Urology, by Lippincott, 1928, p. 424.

TWO CASES OF URINARY EXTRAVASATION

BY AUGUSTUS RILEY, M.D.

I WISH to show the pictures of two different cases of urinary extravasation, that I operated on a short time ago. The cases came to our teaching service, The Fifth Surgical Service, Boston City Hospital. They illustrate very well indeed two different levels of urinary extravasation.



CASE I. Showing multiple incisions of abdominal wall with drains in place. No swelling of scrotum.

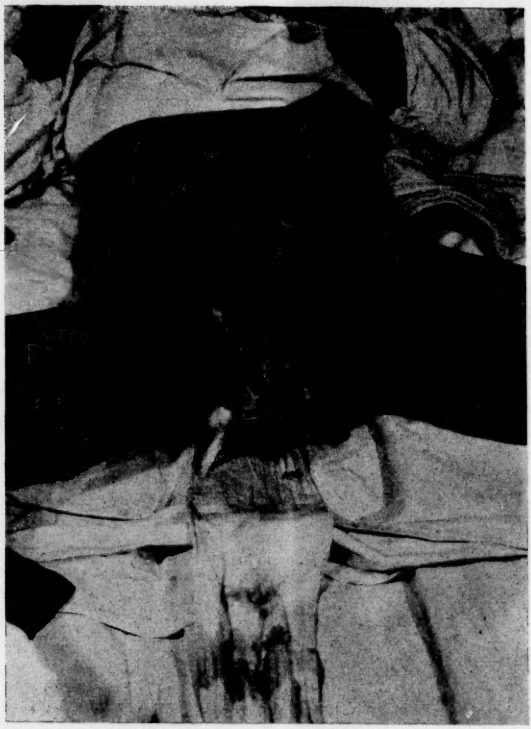
CASE I. Age 52 years. Gives a history of difficult urination two weeks before entering the hospital. He noticed swelling and tenderness at first in perineum. Later swelling and tenderness extended over the pubis and lower front of abdomen. A few days later he noticed a watery foul-smelling pus coming from an opening just above the pubis.

When first seen by me he was a sick appearing man with a foul urinous odor, pervading the entire room. He was dehydrated. The whole front of the abdomen was swollen and red, with a discharging sinus just below the umbilicus to the left of the median line. On the left side of the abdomen the redness extended up to the costal margin; on the right side the redness extended up into the axilla. There was distinct swelling of the perineum, but no noticeable swelling of the scrotum.

Operation—Perineal urethrotomy below the point of the strictured urethra. Stricture cut. Soft rubber catheter placed through entire length of urethra into bladder. Multiple incisions were made into the gangrenous perineal area and over the front and sides of the abdominal area, so as to connect all areas with good drainage. The highest point incised was on the right side at the costal margin.

CASE II. Age 68 years. Was seen the first time on one of the Medical Services. Question, Cause of swollen scrotum?

Examination—Swollen gangrenous perineum and scrotum with a discharging sinus to the side and near the distal end of penis. Swelling and gangrenous area extended up to upper edge of pubic bone.



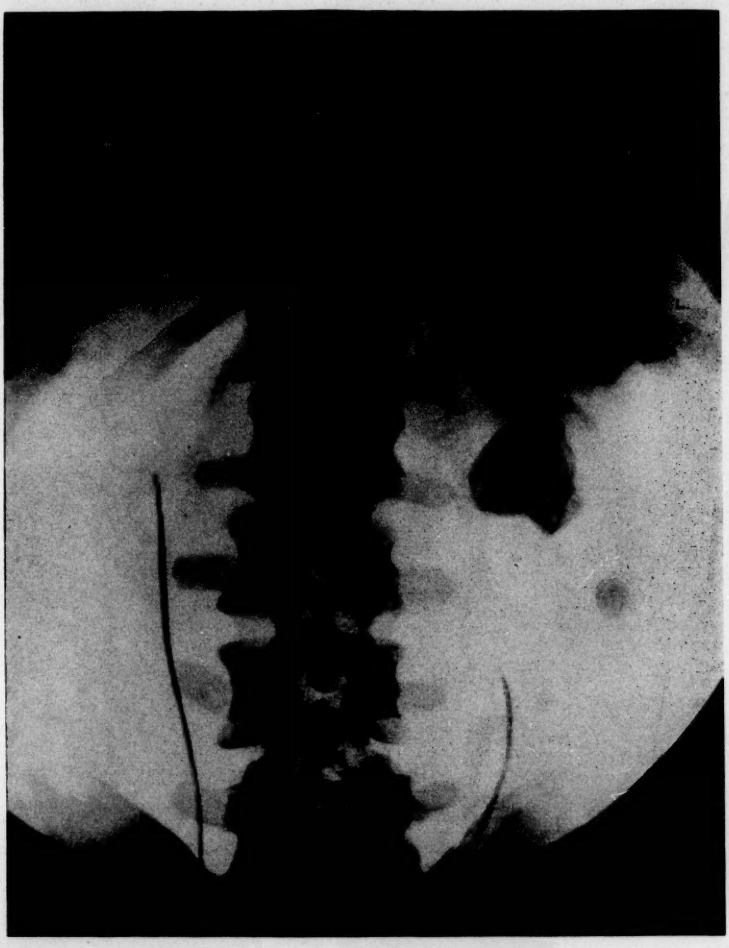
CASE II. Showing multiple incisions with drains in scrotum and above level of pubic bones.

Operation—Perineal urethrotomy. Multiple incisions of perineum and over pubic bones were made. Catheter introduced into bladder through perineal incision as it was impossible to bring catheter down through length of urethra.

RAPID FORMATION OF RENAL CALCULUS

DR. ROGER C. GRAVES, Boston: I brought this film from the Hospital because it illustrates in a rather striking way the rapidity with which renal calculi may develop in some instances. The patient is a young man of 29 whom I first saw only eighteen months ago; at that time he complained of recent acute pain, and examination showed that he had a calculus 1 x 0.5 cm. in the mid-left ureter, with an early hydronephrosis above it. There was also shown by x-ray the shadow of a tiny concretion apparently in the cortex of the kidney on the right side. There was no infection and no other demonstrable abnormality of the urinary system. I removed the ureteral stone by a left extra-peritoneal ureterotomy. The operation was easy

and required but a few minutes; there was never any leakage of urine from the wound; and the convalescence was rapid and uneventful in every respect. The patient left the hospital with the



Photograph of x-ray film. Case of Dr. Graves. Rapid formation of renal calculi.

usual general instructions which he neglected particularly as regards the maintenance of a high fluid intake and abstinence from alcohol.

He has now returned to the Hospital with recent recurrent pain, and an x-ray film shows —as you see—a large renal calculus on the left side, with several smaller stones associated with it. There was a staphylococcus aureus infection in the urine from that kidney. The small cortical concretion in the kidney field on the right has not changed in size and position as compared with the film of eighteen months before. At operation several days ago, it was necessary to remove the left kidney because of extensive infection throughout the substance of the organ, in addition to the stones. The convalescence has been very satisfactory.

A LEIOMYOMA IN A DIVERTICULUM OF THE BLADDER

DR. H. A. CHAMBERLIN: I would like to report the case of a man 79 years of age whom we saw on Aug. 6th of this year.

He gave a history of intermittent hematuria for a year and a half.

He had had no other urinary symptoms. His general health had been excellent. The prostate was not remarkable by rectum.

On cystoscopic examination the bladder outlet appeared normal. Just above and to the right of the trigone was the opening of a diverticulum.

On suprapubic pressure a small area of granulation tissue more or less covered with fibrinous exudate could be seen within the sac.

The cystogram shows a diverticulum with a filling defect of the diverticulum.

At operation Sept. 14th a small thickened area in the wall of the sac could be felt. The sac was excised and we saw the same sort of lesion we had seen through the cystoscope, i. e., granulation tissue covered with fibrin.

Pathological report: Specimen consists of a mass of tissue measuring 3.5 x 2 cms. The tissue is ragged and brownish in color. The wall is thickened. Grossly it does not appear to be carcinoma.

Microscopically the section has practically all the epithelium denuded. The small vessels are congested and there is some extravasation of blood.

In the wall of the bladder is a marked infiltration with lymphocytes, eosinophiles and plasma cells. In one section is a small encapsulated mass about 1 m.m. in diameter, made up of compact smooth muscle.

This is a small leiomyoma. The section shows a chronic inflammation.

Diagnosis: Chronic inflammation and leiomyoma.

Dr. Frank S. Patch, Montreal, read a paper entitled

THE ASSOCIATION BETWEEN LEUKOPLAKIA AND SQUAMOUS-CELL CARCINOMA IN THE UPPER URINARY TRACT*

BY F. S. PATCH, M.D., F.A.C.S.†

THESE relatively rare conditions in the upper urinary tract have, in recent years, received considerable attention and have given rise to much conjecture as to their exact pathogenesis. Most authors, in discussing leukoplakia of the urinary tract, have stressed its importance as a forerunner of carcinoma, and those dealing with the only slightly less rare condition of squamous-cell carcinoma, have almost universally ascribed its development to a preceding leukoplakia. Nevertheless, their actual association in one individual is limited to only a few cases. The recent observation of a case of almost universal leukoplakia of the upper urinary tract, associated with a squamous-cell carcinoma of the bladder and one kidney, has been the incentive to a special study.

It does not seem necessary or relevant in this study to discuss the various theories as to the genesis of leukoplakia, and its related condition, squamous-cell carcinoma, or to deal, in a detailed manner, with their clinical and pathological characteristics. This paper is limited to the possible relationship between the two conditions, and will be devoted to the presentation and examination of such evidence as may be obtained from reported cases, and especially our own, in favour of a direct causal relationship between them. Our attention will be focussed upon those cases in which an actual association of the two conditions in the urinary tract has been found. Before doing this, it will be advantageous to ascertain the frequency of the two conditions in the upper urinary tract.

1. THE OCCURRENCE OF LEUKOPLAKIA IN THE UPPER URINARY TRACT

Up to 1900, the reported cases of leukoplakia were limited. Since that date, numerous excellent reviews have appeared, notably by Englisch, 1907; Kretschmer, 1920, 1922 and 1928; Corsdress, 1923; Hinman, Kutzman and Gibson, 1924; Allemann, 1926; Hennessey, 1927, and Francke, 1927. Collating these and other reports and adding two cases coming under our observation, we have been able to find one hundred and twenty-three cases of leukoplakia occurring in the kidneys, ureters and bladder. Urethral leukoplakia has been excluded, because it is not so unusual, and urethral mucosa is mainly of ectodermal origin.

2. THE OCCURRENCE OF SQUAMOUS-CELL CARCINOMA IN THE KIDNEYS, URETERS AND BLADDER

In studying this question, one is at once struck with the great confusion in the terminology of

*From the Departments of Urology and Pathology, the Montreal General Hospital, Montreal.
Read before the New England Branch of the American Urological Association, Boston, Mass., October 30, 1928.
†For record and address of author see "This Week's Issue," page 460.

this form of tumour, and particularly those occurring in the bladder. Among the terms used are "epithelioma", "pavement epithelioma", "cornifying epithelioma", "squamous-cell carcinoma", "epidermoid carcinoma" and "cancroid". We have made use of the term "squamous-cell carcinoma" as being more descriptive and accurate.

Between the reported cases of this condition and of leukoplakia, there is a fairly close parallel, the frequency being greater in the tumours, probably due to their greater seriousness favouring detection. In all, we have found one hundred and fifty-two cases of squamous-cell carcinoma occurring in the kidneys, ureters and bladder. For the kidney cases, we are indebted mainly to Spiess and Wells. Adding others, we have found thirty-six cases. In the ureters, six cases have been found. The bladder cases are more numerous and are well reported by Hallé, Hinman and Scholl. They total one hundred and ten cases.

3. THE SIMULTANEOUS OCCURRENCE OF LEUKOPLAKIA AND SQUAMOUS-CELL CARCINOMA IN THE KIDNEYS, URETERS AND BLADDER

We thought, on commencing the investigation, that such association was infrequent and have been surprised to find thirteen cases. These will be summarized in chronological order, more or less briefly, according to our ability to secure full reports of the cases. They are as follows:—

CASE 1. *A. T. CABOT.* A male, aged 40 years. Cut for stone in 1870. Urination subsequently was more frequent than normal. In 1884, a sharp attack of cystitis. Five years later he had a sudden stoppage of his stream. Shortly afterwards he passed a small phosphatic stone. Painful urination followed. Occasionally he had terminal hematuria. The urine was loaded with mucus and pus and contained many epithelial cells, singly and in clumps. On admission to the hospital, the bladder was searched and washed out with a Bigelow evacuator. Suprapubic cystotomy was done. A thick flat sheet of tissue was found which could be peeled off from the mucous membrane of the bladder; pachydermia vesicae or leukoplakia. Recovery was slow. In the bladder washings were many pavement epithelial cells. A subsequent paper by Davis includes this interesting case, with the later course of events. In 1892, the patient was suffering from pain and pollakiuria. In 1894, he re-entered the hospital with a discharging fistula above the pubis. The fistulous opening was enlarged by Dr. Cabot and the interior of the bladder explored. It was found invaded by the new growth. A small portion which was removed, proved to be squamous-cell carcinoma. The patient died shortly after and, at autopsy, the bladder, kidneys,

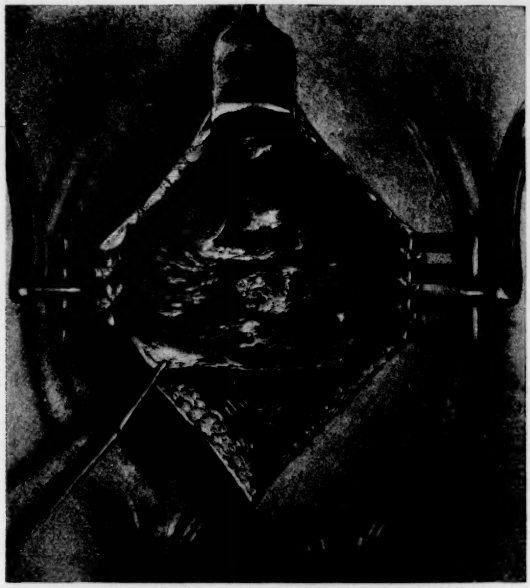


FIG. 1. Drawing made at second cystostomy operation. (Note the two areas of squamous-cell carcinoma at "A" and "B": the whitish areas on bladder wall are the leukoplakic areas.)

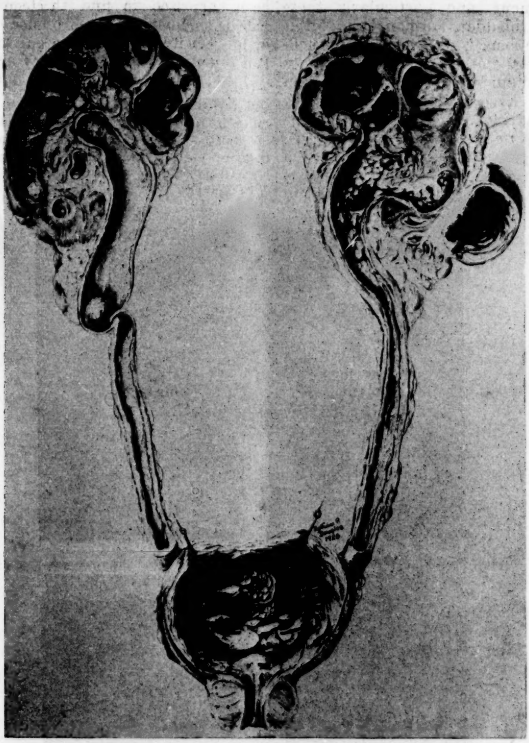


FIG. 2. Drawing of the bladder, ureters and kidneys made at post mortem.

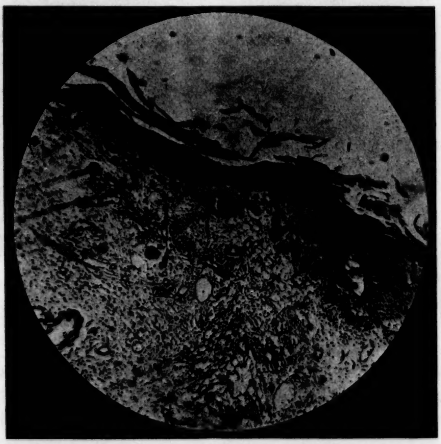


FIG. 3. Section of bladder showing leukoplakia. (Low power.) (Note irregular thickening of the epithelium, with superficial desquamation.)

muscles of the abdominal wall and retroperitoneal lymph glands were found involved by squamous-cell carcinoma.

CASE 2. *HALLE.* A male, aged 49 years, had an old gonorrheal stricture complicated by multiple fistulous abscesses of the perineum. Death followed shortly after an internal urethrotomy. The autopsy showed epidermization of the strictured urethra and the fistulous tracts; chronic cystitis with complete leukoplakia; zones of epithelial invasion; typical squamous-cell carcinoma of the bladder with glandular involvement; bilateral pyelonephritis, calculus in left kidney. This case will be referred to later in our comments.

CASE 3. *KISCHENSKY.* A woman, aged 32 years, sick for one and one-half months. Painful tumour in right knee joint and right kidney region. Urine contained much pus.

Autopsy—squamous-cell carcinoma in right knee joint, liver, diaphragm and right kidney. The right kidney was completely degenerated and replaced by tumour, connective and fatty tissue. There were many pus cavities, filled with white broken-down masses and papillary growths. The kidney had been

FIG. 4. Section of bladder showing leukoplakia. (Higher power.) (Note the squamous type of epithelium.)

FIG. 5. Transverse section of left ureter showing leukoplakia and inflammation. (Low power.)

previously hydronephrotic, later, filled with the new growth. The mucosa of the pelvis and ureter resembled epidermis. In the deeper layers, cell columns of epithelium dipped down. The leukoplakia was so extreme in the calyces, as to fill the entire diphtheritic cystitis; dilated ureters and chronic ureteritis. The right kidney was hydronephrotic, and the entire mucosa was leukoplakic, except in the region of one calyx. In the bladder was found a squamous-cell carcinoma.

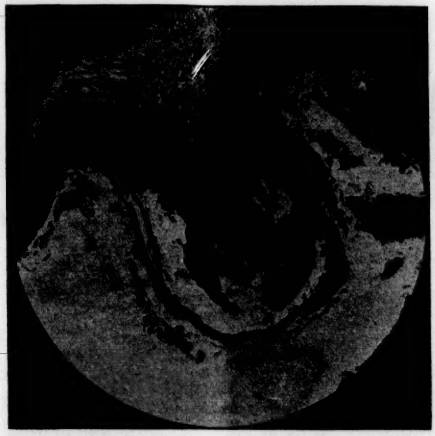


FIG. 6. Transverse section of left ureter, same as No. 5. (Higher power.)

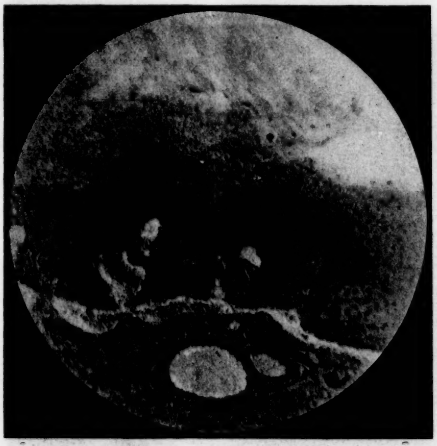


FIG. 7. Section showing leukoplakia of pelvis of kidney. (Note the sharp line of demarcation between the leukoplakia and the kidney tissues.)

lumen with cornified cells. In some spots in the ureter, the cornification almost completely blocked the lumen. The left kidney, ureter and bladder showed no leukoplakia.

CASE 4. *RONA.* A male, aged 46. Clinical diagnosis: Pulmonary and uro-genital tuberculosis. Autopsy revealed chronic purulent pyelonephritis;

CASE 5. *ALBARRAN.* A male, aged 38. Previous history not stated. Suprapubic extirpation of an ulcerating squamous-cell carcinoma arising on a leukoplakic basis. Patient living and well three years later.

CASE 6. *RECKTENWALD.* A male, aged 60. Bladder trouble, which had developed in the course of several

months. Previously, no great trouble of bladder or kidneys. Never had colicky pains. Autopsy: left hydronephrosis, the left ureter dilated. The left pelvis covered with a glistening membrane, at the lower end of the left ureter, some fragments of this membrane. In the bladder was found a foul necrotic squamous-cell carcinoma.

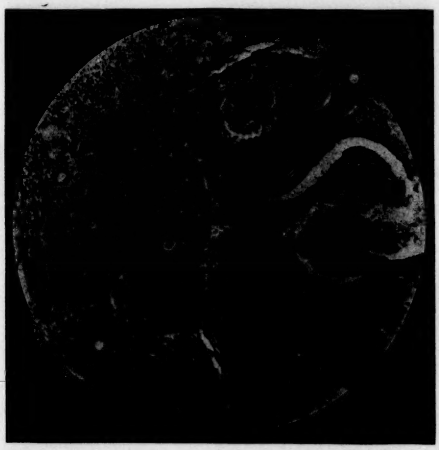


FIG. 8. Section showing squamous-cell carcinoma of bladder, showing pearl formation. (Low power.)

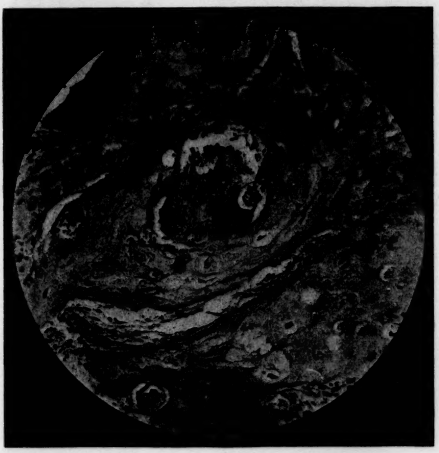


FIG. 9. Section showing pearl formation from No. 8. (Higher power.)

CASE 7. *SPIESS.* A woman, aged 54 years, suffered for years from left-sided pyelitis; pains in the left loin and pyuria. Shortly before operation she had left renal colics and loss of weight. Cystoscopic examination revealed a cystitis, and the right kidney to be functionally sound. From the left ureter no urine was obtained. Diagnosis—tumour. At operation, the kidney pelvis was dilated, and in it a large oxalate calculus and a tough non-papillary tumour were found. Six months later, there were metastases along the vertebral column in the abdomen and pains radiating to the left leg. Examination of the kidney showed the pelvis dilated, its mucosa greyish white, somewhat cornified, resembling epidermis and partly lying in folds. At the lower end of the pelvis there was a round prominent tough tumour, with sharp edges. The pelvis contained a

2 x 3 cm. oxalate calculus. The pathological diagnosis was leukoplakia and squamous-cell carcinoma.

CASE 8. *MARION.* A woman, aged 31 years, had suffered from a very old and refractory cystitis for sixteen years with alternating periods of aggravation and improvement. At the time of examination she urinated every half hour. The urine contained a small amount of pus and she had slight right-sided renal pain. At cystoscopy the bladder presented a white surface, very extensive on its upper and posterior aspects. In the region of the right ureter, there were two apparent ulcerations. Ureteral catheterization showed that the right kidney contained pus and was slightly lower in function than the left kidney. The bladder was opened and leukoplakia diagnosed. The two ulcerating lesions were hard. It was decided to re-sect the leukoplakic areas and the two neoplasms. This was done by a transperitoneal resection, and it was necessary to section the ureter. The upper end was lost and closure and drainage had to be done without dealing with it. The patient did well temporarily, drainage being free from the extra-vesical drain. Later, signs of a

FIG. 10. Section showing squamous-cell carcinoma, infiltrating kidney.

FIG. 11. Section, same as No. 10, showing kidney infiltration and pearl formation.

right renal infection and pyonephrosis developed. Later, the right kidney was removed but death followed a few days later. Microscopical examination of the bladder confirmed the diagnosis of leukoplakia. The two ulcerating lesions in the lower edge of the mass six cms. in diameter on the dome of the bladder. A transperitoneal resection of the upper third of the bladder was performed. Patient died six months later from extensive local recurrence. The sections showed moderate pearl body formation. "In one section the neighboring mucosa was covered by an area of leukoplakia".

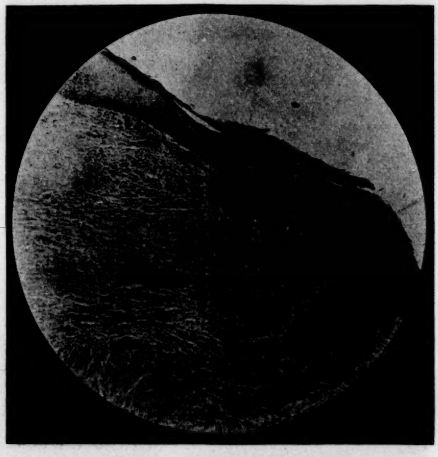


FIG. 12. Section showing leukoplakia of bladder, showing sharp line of demarcation.

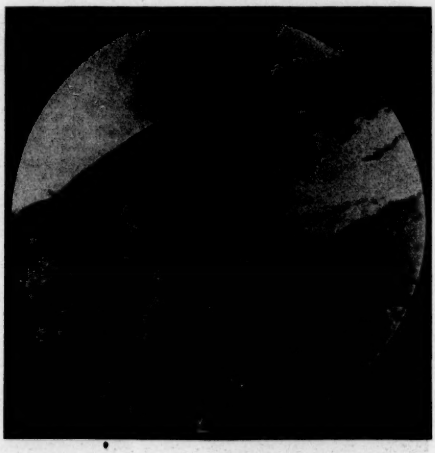


FIG. 13. Section showing leukoplakia of bladder, showing indefinite line of demarcation (transitional stage). (Low power.)

This case is included, even though the finding of leukoplakia was a microscopic one.

leukoplakia were definite squamous-cell carcinoma, with clearly defined pearls.

CASE 9. *SCHOLL.* A male, aged 32 years. Pain in right lower abdomen, moderate frequency and dysuria of three months' duration. Loss of weight of twenty pounds. Cystoscopy revealed a necrotic

CASE 10. *von BORZA.* A male, aged 82, who had a stone removed seven years previously by cystotomy.

Since, he has been on catheter life. Before he entered hospital, the urgency had increased so much, he had to be catheterized every half hour. Fever. Foul urine. Bladder capacity 50 c.c. Cystoscopy showed an enlarged prostate, a calculus, a thickened vesical mucosa, and near the urethra, a spot like mother of pearl. Prostatectomy was performed, the stone removed, and the leukoplakic patch excised.

"At the beginning of the leukoplakia, the connective tissue is sharply demarcated. At one spot, however, where the process is best marked, the leucocytic infiltration is marked. Here the differentiation of epithelium and connective tissue is indefinite. The cells show mitosis, and differences of form characteristic of carcinoma. The cells grow into the connective tissue and form islands. Differentiation of these cells and leukoplakic epithelium is shown by lighter staining of the island cells."

FIG. 14. Section, same as No. 13. (High power.)

FIG. 15. Section, same as No. 13 and No. 14. (Higher power.)

Diagnosis—Prostatic adenoma, leukoplakia and squamous-cell carcinoma.

CASE 11. *von BORZA.* A woman, aged 52. 1912, operation performed for bladder papilloma. Well for two years. In 1916 and 1923, urinary difficulties. In 1924, crampy pains, with frequent bloody micturition. Cystoscopy revealed near the fundus, a growth

3 cms in diameter, broken down, with everted edges. Around it, and near the right ureter, the mucosa was thick greyish white, resembling mother of pearl. On the opposite side of the bladder, there were smaller and larger areas of leukoplakia. At operation in August 1924, the tumor and the surrounding leukoplakia were excised. The remaining areas were treated with the cautery.

Pathological diagnosis—Leukoplakia and squamous-cell carcinoma.

FIG. 16. Section showing leukoplakia of bladder, from a different area, showing indefinite line of demarcation (transitional stage). (Low power.)

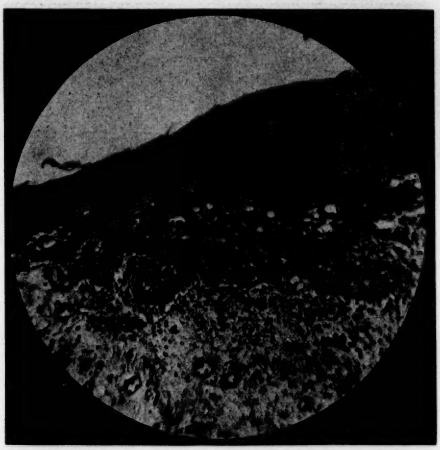


FIG. 17. Section, same as No. 16. (High power.)

CASE 12. *THOMSON-WALKER.* A male, aged 63, had passed calculi at intervals for twenty-seven years. For two years there had been stabbing lumbar pain and recently, severe attacks of pain about once a fortnight. There had never been hematuria. The right kidney was much enlarged. There was increased frequency of micturition; the urine contained much pus and gave a pure culture of staphylococcus albus. X-ray showed a large shadow in the right lumbar region. Right nephrectomy was followed by an uninterrupted recovery.

"The kidney had the external appearance of a large calculous pyonephrosis. Upon incision, a quantity of pus and debris escaped from the dilated pelvis. A large rounded calculus, with a rough

surface lay in the pelvis in a bed of greyish-white shaggy material, resembling asbestos. This material lined the middle third of the pelvis and extended into the slightly dilated calyces at this level. It was 1/8 in. to 1/4 in. thickness. The surface was shaggy and the upper and lower edges were sharply defined. The renal pelvis and calyces above the affected area were dilated".

Microscopical examination of the asbestos-like lining showed leukoplakia which passed into squamous-cell carcinoma with cell nests. The infiltration had not penetrated beyond the muscular wall of the pelvis and there was no infiltration of the kidney substance. No enlarged lymphatic glands were found at the operation.

FIG. 18. Section, same as No. 16 and No. 17. (Oil immersion.) (Note the large elongated and deeply staining epithelial cells among the fixed tissue cells.)

CASE 13. *PATCH.* A male, farmer, aged 47, was admitted to the Montreal General Hospital on June 7th, 1927, suffering from retention of urine. Sixteen years ago he had slight dysuria and urinary symptoms have been present ever since. At the onset there was no frequency and no hematuria, and he occasionally passed small pieces of a "stringy" material which he could crush with his fingers. About eight months later, nocturnal frequency and urgency developed. He was told he had an "inflammation of the bladder," which improved slightly under treatment. However, about once every two months, he voided this stringy material, which occasionally blocked the stream for periods of twenty-four hours. Gradually the frequency increased, associated with urgency. In spite of the urinary symptoms, his general health remained good up to May 1927, when he first noticed blood in the urine. On May 16th he had to be catheterized. The urine was bloody for two days, then cleared. Frequency increased, bleeding recurred on June 6th, when acute retention developed, necessitating his removal to the hospital the next day. During the previous year he had lost from ten to twelve pounds in weight and his strength had failed appreciably. More recently, he had complained of a dull aching pain in the right lower quadrant. Other than this illness, and the usual maladies of childhood, he had never been ill. He denied having had venereal disease.

On admission on June 7th, 1927, he had a temperature of 101, and complained of severe pain in the bladder area. A soft rubber catheter was passed with some difficulty, grating being noted along the urethra. 350 c.c. of blood stained urine, containing albumin and pus, were removed. The prostate was slightly enlarged and an ill-defined soft tender mass was felt just above the prostate. The patient was azotemic, with blood urea nitrogen of 64 mgms. per 100 c.c., creatinine 3. X-rays showed a suggestive shadow in the right kidney region. Cystoscopy on the day following admission was followed by a chill and rise of temperature to 104. The bladder had a small capacity, and owing to the presence universally of a grey sloughy covering, but little could be made out. Regular catheterization was carried out, but became more difficult and the blood urea nitrogen had risen to 72 mgms. on the 13th. A cystostomy was done on the 14th, seven days after admission. On opening the bladder there was a gush of bloody foul-smelling urine. The mucosa was heavily encrusted with a phosphatic material, which was removed with difficulty. No tumour mass was palpated. The bladder was drained. The diagnosis of encrusted cystitis was made. During the next three months his general condition improved somewhat, but the azotemia persisted, the urea nitrogen never falling below 45 mgms. The drain was removed and he began to void naturally. The residual urine remained at 150 c.c. and the urine never entirely cleared. On October 4th, it was noted as being foul and purulent. Cystoscopy about this date showed a different picture to that revealed at the previous operation. Distention was poor on account of the suprapubic fistula, and the view not entirely satisfactory. However, a pale irregular cauliflower growth was noted near the bladder neck. What could be seen of the remainder of the bladder was velvety in appearance. Rectal examination revealed an indu-

rated fixed mass above the prostate, more marked to the left side. It was decided to re-open the bladder for direct observation and improved drainage. This was done on October 6th. The bladder contents were foul-smelling and impregnated with a gritty phosphatic material. Wide retraction being secured and the bladder lavaged, the following conditions were noted,—"There is a circular, raised growth, 3 cm. in diameter in the right infero-lateral aspect of the bladder, with edges circumscribed and everted and a base which is irregular and hard. At the base of the bladder, involving the right half of the trigone and the right ureter, there is a broken down, hard, ulcerating infiltrating growth 6 x 3 cms. Both these lesions are continuous with a grey lustreless area of leukoplakia which covers the right half of the bladder. The remainder of the bladder is of a deep red and inflammatory character. The right ureter gapes and discharges a turbid urine". In view of the renal disability, any radical treatment was deemed useless, and after taking sections from three selected areas, the incision was closed with suprapubic catheter drainage.

Microscopical examination by Dr. L. J. Rhea, (S-27-1014).

"There are three specimens, one from the margin of the area of leukoplakia in the right lower half of the bladder and one each from the two areas of ulcerating tumour. The tissue was put in fixative in the operating room.

A large number of sections have been made from the specimen taken from the area of leukoplakia and these have been stained with various differential stains. Each section shows two different kinds of covering epithelium, an inflamed and superficially ulcerating mucous membrane and leukoplakia. The line of demarcation between them is quite sharp, the inflamed mucous membrane is both acute and chronic in character. The leukoplakic area varies in detail, but the following features are present in all sections. The epithelium is greatly thickened, the thickening varying considerably even in the same section. It is squamous in character. Its superficial surface shows a cornified layer which varies in thickness. In some places it is quite thick and shows desquamation. There is, however, a striking difference in the deepest layer of epithelial cells in the leukoplakic areas. In some places, the line of demarcation between the epithelium and the submucous tissue of the bladder is very sharp and occurs as a straight line; in others, this line of demarcation is not so sharp, due to finger-like projections of various lengths and widths. Between these extremes, there are all grades of variation. In some less sharply demarcated areas, the deepest layer of epithelial cells are large, elongated, stain deeply and have no definite line of demarcation from the underlying tissues, in fact, they blend imperceptibly with them. I believe that this is a definite precancerous change, if it is not, in fact, early malignancy.

Sections from the two tumour areas show typical infiltrating squamous-cell carcinoma with pearl formation and acute inflammation.

Microscopical diagnosis—
1. Acute and Chronic Cystitis.
2. Leukoplakia.
3. Precancerous lesion.
4. Squamous-cell Carcinoma."

Following the operation, apart from a brief improvement resultant from the better drainage, he steadily failed, the blood urea nitrogen gradually rose, and death occurred on April 15th, 1928.

Abstract from Autopsy, A-28-121, performed nine hours after death:—

"Kidneys—The right weighs 235 gms. and the left, with adherent tissue weighs 370 gms.

The left kidney—There is a large amount of perirenal fat to which the kidney is bound by dense adhesions. Most of the kidney tissue is replaced by pyogenic abscesses and a tumour which infiltrates the kidney substance. Soft, necrotic, rather dry partly cornified tumour fills and distends the pelvis. The pelvis, uninvolved in the tumour tissue, shows leukoplakic areas. In the last portion of the pelvis and the first portion of the ureter this leukoplakia is very marked.

The right kidney—There are abscesses in the kidney substance and extensive leukoplakic changes in the pelvis of this kidney. There is no evidence of carcinoma. There is a small phosphatic stone in one of the dilated calyces.

Ureters—Both ureters are thickened, dilated and show extensive leukoplakia, with superficial cornification. The latter material can be removed as thin white plaques. All these lesions are most marked in the left ureter. The upper 5 cms. of the right ureter is widely dilated down to a point where there is a sharp kink. This dilated portion contains a large phosphatic stone. Both ureters, especially the left, are firmly bound to the surrounding tissue by fibrous adhesions.

Urinary bladder—The bladder wall is greatly thickened. The mucous membrane shows extensive leukoplakia. The uninvolved areas are greyish red in colour and deeply injected. The leukoplakic areas are irregular in outline, vary in size, are very white and from their surface cornified material can be easily scraped off. Above, and especially to the right of the trigone, there is a fungating, ulcerating mass, 7 cms. in diameter which involves the ureteral openings and infiltrates the bladder wall. There are numerous small phosphatic stones in the bladder.

Prostate—Firm, somewhat enlarged, with a definite median bar 2 x 3 cms. in its greatest diameter.

Abstract from Dr. L. J. Rhea's microscopical report on sections.

"Sections from the left kidney show extensive destruction of the normal tissues; acute and chronic inflammation; actual abscess formation and areas of atrophic tubules and hyalinized glomeruli.

Sections, including the pelvis, show acute inflammation; areas of leukoplakia and the presence of a squamous-cell carcinoma rich in pearl formation, which extends into and destroys a large amount of the kidney substance and fills and dilates the pelvis of the kidney. The tumour tissue within the pelvis consists of great masses of cornified epithelium.

Sections from the right kidney show both acute and chronic inflammation of the kidney substance and extensive areas of typical leukoplakia in the pelvis.

Ureters—Sections have been made from various levels. Both ureters show chronic and acute inflammation and leukoplakia. This is most marked throughout the left ureter where there are, in places, acute lesions which have led to the loss of the covering epithelium. The leukoplakic areas vary in thickness, as well as in the amount of cornification. In some areas the epithelium is very hyperplastic and the cornified layer is thick. No evidence of carcinoma has been found in the ureters.

Bladder—Sections show squamous-cell carcinoma,

areas of typical leukoplakia and acute and chronic inflammation.

Microscopical diagnosis:

1. Extensive leukoplakia of the upper urinary tract.
2. Squamous-cell carcinoma of the bladder.
3. Squamous-cell carcinoma of the pelvis of the left kidney with infiltration of the kidney.
4. Acute and chronic cystitis.
5. Acute and chronic pyelitis.
6. Pyonephrosis.
7. Calculus, right kidney and right ureter.
8. Multiple calculi in the bladder."

Of the cases reviewed, in seven (Cabot, Scholl, Marion, Hallé, Albarran and von Borza), the leukoplakia and the squamous-cell carcinoma were in the bladder. In two (Kischensky, and Spiess) in the kidney, and in our own, in both kidney and bladder. In two cases, the conditions were in different organs (Rona and Recktenwald), the leukoplakia being in the kidney and the carcinoma in the bladder.

DISCUSSION

Is there a relationship between leukoplakia of the urinary tract, and squamous-cell carcinoma? Most writers on leukoplakia in the urinary tract have been convinced that it was a forerunner of carcinoma, particularly Hallé, Albarran, Kretschmer and Hinman, though Corsdress is equally firmly convinced that such a transformation occurs very infrequently. Franeke suggests that it is incorrect to assume that the carcinoma necessarily arises from an antecedent leukoplakia, and that it is equally correct to infer that the epidermal metaplasia may have developed coincidently into the atypical epithelial growth. Hinman also gives his support to this theory of a vesical leukoplakia malignant in character from the onset. To most people, the apparently few reported cases of an association of the two forms of heterotopic epidermatization, to use Hinman's term, has been a stumbling block. The collection and analysis of thirteen cases of the association of the two conditions would seem to add weight in favour of their causal relationship, and may stimulate further reports along the same lines.

Hallé, from whose article on "Leucoplasies et cancroides dans l'appareil urinaire", one of the cases in our series was taken, was most emphatic in the contention that squamous-cell carcinoma is to be attributed to a malignant transformation of a leukoplakia. An analogy was drawn by him and others, from the similar tendency about the oral cavity, of leukoplakic patches to develop into epitheliomata.

The case of Cabot is particularly valuable and instructive, carefully followed up, as it was, to the autopsy. Such clinical evidence seems weighty, and Hinman states his opinion that "it seems hard to dispute such evidence as is presented by this very case, and that of Marion".

The mere association of the two conditions, however, even supported by such clinical evidence, as has been presented, is not convincing, unless we can show transitional stages between the two conditions, either in cases of leukoplakia alone, or where they are associated in the same urinary tract. An examination along these lines has revealed something of importance.

First, there is the finding of Hinman, Kutzmann and Gibson. In a case of leukoplakia of the renal pelvis, they found in the sections, atypical epithelial growth. "The leukoplakia of the pelvic mucosa showed, where its development was most intense, a papillary down-growth, which, in one area, has almost the appearance of carcinoma, and must be regarded as definitely precancerous". To quote them further, "It is this condition which probably, in most cases, gives rise to the relatively rare squamous-cell carcinoma".

This same tendency is discussed at length by Hallé in his comments upon his case, (No. 2 of our series). In a badly preserved specimen, there were, alongside of the simple leukoplakia, lesions of leukoplakia, complicated by epithelial infiltration and well-characterized, ulcerated squamous-cell carcinoma, in his own words "three degrees, three co-existing ages, of the same pathological process".

More conclusive evidence is to be found in the microscopic examination of the sections from our case obtained at operation on the bladder from the leukoplakic and carcinomatous lesions. These sections possessed the advantage of having been placed immediately in fixative. Dr. Rhea was particularly anxious to secure evidence of transitional stages. At first unsuccessful, more careful and repeated examinations revealed lesions of an intermediate type, which if not definitely malignant, are certainly precancerous in character, and which are fully described in his microscopical report and are depicted in the accompanying illustrations.

We feel that our case offers the strongest evidence yet presented in favour of a transition between leukoplakia of the upper urinary tract and squamous-cell carcinoma in that location.

There are many clinical features in connection with this case which are of interest. The long history of an inflammation in the urinary tract, the encrusted cystitis, the formation of multiple calculi, the dilatation of the ureters and kidney pelves, with marked infection of the tract, with perinephritis, periureteritis and pericystitis, and the presence of an enlarged and obstructing median bar of the prostate are not without clinical significance. While these are of interest, the scope of this paper does not call for their detailed consideration.

In conclusion, we desire also to thank Dr. L. J. Rhea, Director of the Pathological Laboratory, for his unfailing interest, encouragement and valuable assistance.

BIBLIOGRAPHY

1 Albarran: Quoted in Hinman, loc. cit.
2 Albarran: Annales des maladies des organes genito-urinaires, XVIII, 1901, 701 and 918.
3 Allemann: Schweiz med. Woch., LVI, 1926, 998.
4 Cabot: Amer. Journ. Med. Sci., CI, 1891, 135.
5 Corsdress: Zeit. f. urol. chir., XIII, 1923, 1.
6 Davis: Annals of Surgery, XLIII, 1906, 566.
7 Englisch: Zeit. f. urol., I, 1907, 641 and 745.
8 Francke: Beitrage z. path. anat. und z. allgem. path., LXXVIII, 1927, 315.
9 Hallé: Annales des maladies des organes genito-urinaires, XIV, 1896, 481 and 577.
10 Hennessey: J. A. M. A., LXXXVIII, 1927, 146.
11 Hinman: Journal of Urology, VI, 1921, 1.
12 Hinman, Kutzmann and Gibson: S., G. and O., XXXIX, 1924, 473.
13 Kischensky: Beitrage z. path. anat. und z. allgem. path., XXX, 1901, 348.
14 Kretschmer: S., G. and O., XXXI, 1920, 225.
15 Kretschmer: Arch. of Surg., V, 1922, 348.
16 Kretschmer: S., G. and O., XLVII, 1928, 145.
17 Marion: Journ. d'Urol., IX, 1920, 257.
18 Rona: Monatschrift für Urologie, VI, 1901, 705; abstracted in Corsdress, loc. cit.
19 Reckteuwald: Inaugural dissertation, Freiburg, 1909; abstracted in Corsdress, loc. cit.
20 Scholl: Arch. of Surg., III, 1921, 336.
21 Spiess: Centralb. f. allg. Path. und Path. anat., XXVI, 1915, 553.
22 Thomson-Walker: Proceedings Royal Soc. Medicine, Sect. Urol., XX, 1927, 720.
23 von Borza: Zeit. f. urol. Chir., XIX, 1926, 194.
24 Wells: Arch. of Surg., V, 1922, 356.

DISCUSSION OF DR. PATCH'S PAPER

DR. J. DELLINGER BARNEY, Boston: I think we have listened to an extremely valuable and an extremely thorough paper on leukoplakia and its association with carcinoma of the upper urinary tract. It seems obvious that this association presents a number of interesting pathological problems, and with that idea in mind I took the liberty of asking Dr. Wolbach of the Harvard Medical School to come here and throw some light on the subject from the pathological standpoint.

DR. S. B. WOLBACH, Boston: The hour is late for asking a pathologist to talk upon leukoplakia and it may become necessary to cut him off because the subject is an enticing one.

I find nothing to take exception to in the paper presented. The observations presented seem accurate and in fact I have always found Dr. Patch to be an accurate observer. The facts of the case he presented and of similar cases in the literature must be accepted.

So called metaplasia and heterotrophic proliferation in relationshop to cancer has received much study and the subject is well covered in a paper by Lubarsch in 1906. At that time I was impressed by the descriptions of Lubarsch of the leukoplakias which precede the occurrence of cancers in various situations in the body. These antecedent processes, such as Doctor Patch showed with lantern slides are quite comparable to the keratoses following repeated x-ray exposures. That x-ray keratoses are often succeeded by epidermoid carcinoma is now well known. Dr. C. A. Porter and I in 1909 described the sequences from early keratosis to carcinoma. Today it is not possible to provoke argument among pathologists regarding the relationship of long-continued inflammatory processes and origin of carcinoma. It is the one accepted factor in the etiology of carcinoma. We must however qualify, or perhaps particularize, the term "chronic inflammation" as applied to the etiology of cancer and this I have done for my students by saying that all of the known inflammatory conditions antecedent to cancer are such as require the continuous proliferative activity of epithelium in the attempt to maintain continuity of surface. The immediate proliferation of epithelium when its continuity is interrupted is an invariable response and the proliferation continues as long as the defect exists. This applies regardless of the primary agent, whether radiant energy, parasitic worm, foreign body in a hollow organ, discharging sinus from a chronic osteomyelitis or what not. Leukoplakia is the effect of increased defensive proliferation of epithelium—the response to what might be termed the first law of epithelium. Leukoplakia is common outside the genito-urinary tract, in trachea, bronchi, gall bladder; it even occurs in the stomach, and most frequently on the tongue and buccal mucosa. Ewing in his text book quotes Fournier to the effect that about 30 per cent. of leukoplakias of the tongue become cancers.

We have been accustomed to regard leukoplakia as a response to conditions locally damaging to the epithelium. Recently other factors have come to notice, in work which Dr. Percy Howe and I have been doing in the endeavor to characterize pathologically the deficiency diseases or avitaminoses. In vitamin A deficiency, in the human called Xerophthalmia or keratomalacia, we found in rats and guinea pigs a very striking and extensively distributed metaplasia of epithelium in the conjunctivae, the ocular glands, alimentary tract, respiratory tract and genito-urinary tract. In these locations the epithelium becomes replaced by a stratified keratinizing epithelium, a condition similar to or comparable with leukoplakia. If I had known this morning that I was scheduled to discuss Dr. Pateh's paper I should have consulted our records of some 300 experiments, but I now estimate that about one-fifth of the rats with vitamin A deficiency died of obstruction in the genito-urinary tract caused by occlusion of bladder, ureters or renal pelves with desquamated keratinized epithelial cells. Although the A deficiency affects the animal as a whole, the local effects as shown in epithelial structures exhibit unexplainable vagaries, a fact which may have important clinical bearings. As a matter of fact the most frequent immediate cause of death in our animals is the consequence of occlusion of bronchi by desquamated keratinized cells. Nose and throat doctors are now paying attention to the diet of patients, par-

ticularly children, with chronic inflammation of sinuses.

The change of epithelium is not a direct transformation. The replacing keratinizing epithelium arises from intercalated cells; it grows rapidly and undermines the normal epithelium which is cast off. Whether a similar process occurs in ordinary leukoplakia is not known. In our experimental animals histologic appearances simulating early cancer are not uncommon so that I am convinced that the general and local factors in causation of leukoplakia are important in any consideration of the etiology of cancer.

Finally I must say that I like to see a practicing surgeon do the kind of work that Dr. Patch has done in connection with this case. I should like to see every surgeon become pathologist; not meaning that he should cut and stain sections, but that he should direct the study of his material, its proper conservation and become competent with the microscope to a degree giving independence to the routine of the professional pathologist. The surgeon is in a much better position to see problems which are not apparent in material wrapped in moist gauze lying upon the laboratory bench.

Dr. E. G. Crabtree, Boston: I have been delighted with Dr. Patch's presentation and I have nothing here to present that has a direct bearing on the subject. I have, however, listened with a great deal of interest to the statements of both Dr. Wolbach and Dr. Patch as to the frequency with which other pathology occurs in these leukoplakic conditions of the urinary tract.

The case of which I am going to show you the lantern slides is one in which no other pathology could be found. This was a man, robust, and in the early forties. He gave a history of hematuria with no symptoms in the intervals. We caught him at a time when he still had bleeding, his urine was full of blood. The pyelograms led to mistaken diagnosis because they suggested a papillary tumor due to misinterpreted blood clot. At operation a normal appearing kidney was found. The specimen is at the hospital. I have, however, the sections which include the pelvis and kidney substance. The kidney had no stone. There was no malignant change. The pelvis was not dilated, and the leukoplakia extended throughout the pelvis and for a length of two and a half inches down the ureter. The sections showed definite leukoplakia with no other concurrent pathology.

(Showing and demonstrating lantern slides.)

Dr. Frank S. Patch, Montreal, (closing): *Mr. President and Gentlemen*—May I thank you most heartily for the interest you have displayed in my rather academic subject. However, on expressing to a friend my feeling of diffidence in presenting such a paper to you, he confirmed an impression I already had, that in no city, and before no society, would such a subject be so well received as at Boston, and before the New England Branch of the American Urological Association. I am greatly indebted to my old friend, Dr. Wolbach, for sparing some of his valuable time to be present at this meeting and to discuss my contribution. The association of pathologist and urologist is a most profitable one for the urologist, and the participation of a pathologist in a meeting of urologists, is to me an incident of the greatest value. At McGill, and particularly in the Montreal General Hospital, we owe much to the pathological schools of Boston, for the modern installation in the pathological department of our "M. G. H." is entirely due to a succession of Boston trained pathologists, Drs. Duval, Wolbach, Burgess and Rhea. Association with these men has been a most valuable and stimulating experience to our hospital staff, and to me personally a distinct inspiration, which grows as the years pass.

Purposely I did not discuss the subject of leukoplakia in general, as taking me too far afield, and because I wished to limit myself to the association of the two conditions of leukoplakia and squamous-cell carcinoma in the urinary tract. The causal relationship between these two conditions in other parts of the body is apparently accepted by pathologists. About the mouth, as Dr. Wolbach quoted, 30% of leukoplakia becomes cancerous. In the urinary tract, the association, while surmised, has not been so well recognized by urologists. Modern urological methods are enabling us to detect leukoplakia more frequently than formerly, particularly in the bladder. In this situation it can be dealt with readily by excision or cautery. In the upper tract, the occurrence of inflammatory and obstructive changes may permit its early detection, and if unilateral, a nephrectomy may be performed. The danger of a leukoplakia turning into cancer must be admitted, and the importance of its early detection the more clearly recognized. The work of Dr. Wolbach in experimental leukoplakia is new to me, and, I think, to most urologists and should be more widely known. Such ignorance on our part emphasizes the importance I previously pointed out, of a closer association between urologist and pathologist.

In conclusion, may I again thank you for the honor you have conferred upon me, in inviting me to present a paper before your Branch, and for the patience you have displayed in listening to it.

Dr. J. Dellinger Barney, Boston: I feel that we owe Dr. Patch a vote of thanks for coming here to give us this interesting paper and I think that Montreal and this country and urology in general is to be congratulated for having Dr. Patch's work on this subject.

I think a motion to give a rising vote of thanks to Dr. Patch would be in order.

Motion made; all present rise.

ADJOURNMENT.

IS THE STATE'S CANCER PROGRAM STATE MEDICINE?*

BY GEORGE H. BIGELOW, M.D.†

TO answer this one must know two things: What is the cancer program and what is State Medicine. But lest I be understood to be attempting to hide a possibly unpleasant conclusion under a mountain of verbiage let me make it clear that it seems to me to be perfectly obvious that under any reasonable definition the cancer program is State Medicine. Also it seems that the very elements which force its inclusion in this medically-hated category are the elements which present the overwhelmingly greatest difficulties of maintaining quality in the quantity demanded and under the administrative handicaps inherent in a democracy. But perhaps we are putting the exhaust before the head light.

What is the cancer program? An enormous amount of hard thinking and study over more than ten years has been put into the matter by my eminent predecessor, Dr. Kelley, by Dr. Robert Greenough and others. But we will consider here only what has developed under the legislative mandate of 1926, which in its disregard of the feelings of the medical profession showed at least one element inherent in state medicine. Under the act the program was developed with the advice of medical and lay advisory committees made up of persons of astonishing quality.

(1) *The State Cancer Hospital.* About a year and a half ago a ninety bed hospital was opened at Pondville where a high quality of service is given, thanks largely to the interest and sincerity of the visiting staff, the skill and devotion of the nurses, and the liberal equipment. Here persons in all stages of cancer are treated without economic let or hindrance and charges at "not more than cost". These charges are paid by the individual or the town of residence. Previous to this, cancer has been cared for by the State when found in conjunction with poverty. This new step establishes an interesting precedent for the handling of the other numerous degenerative diseases which are becoming numerically more and more important.

(2) *State-aided Cancer Clinics.* There are now scattered throughout the Commonwealth seventeen State-aided clinics. Others will be opened when local medical opposition can be overcome. Realizing that professional support must be obtained we have in each instance presented our program to the local medical profession. After a vote of support the appointment by the local medical society of a local medical cancer committee has been authorized. This is the committee with which the Department does business. It is responsible for all the multiple administrative and medical problems connected with the clinic. In general these committees, which have joint meetings once or twice a year, have shown surprising interest. If this can be maintained there is hope of quality. If not, where are we? And yet it will be costing as much money. In each clinic there is a social worker. Next to sound clinicians the effectiveness of the service depends on her more than on any other single factor. In each instance there is a local cancer education committee appointed by the local medical committee. It takes care of publicity, education and advice on the more difficult social problems.

In 1928 the clinics saw approximately 3000 individuals of whom about 600 were cancerous. In the month following the joint cancer campaign last spring, 12,000 were brought under medical attention; 1,700 with cancer. For every one going to the clinic, twenty-two went to the private office. (Is this what is slightingly meant in medical parlance by state medicine?) Only half as high a proportion going to the private office were said to be cancerous, as from the clinic group (14 per cent. as compared with 28 per cent.). If this ratio held throughout the year (and I know of no good reason why it shouldn't since the same elements of publicity which caused fluctuation in clinic attendance following the campaign was felt in the private office) from the total clinic attendance and the proportion with cancer both in and out of the clinic we have the very large figure of over 10,000 cancerous people being seen medically in the State last year. There were some 5,500 cancer deaths in the same period.

(3) *Cancer Education and Studies.* From the studies following our cancer campaign of last spring, as has been pointed out, apparently one of the most specific results of our annual expenditure of some $40,000 is to place a large number of individuals in the private doctors' offices (95 per cent. of those influenced by us). This education has been handled directly by us and also through the astonishingly devoted local committees. Our records and files, admittedly far from complete, particularly as regards the activities of the local committees, show that 102 addresses have been given largely by the splendid group of physicians who have composed our bureau of medical speakers. Also they show twelve radio talks, 23 showings of cancer films, the distribution of 117,000 pieces of printed matter, and over 8,000 inches of newspaper space.

As to studies, we have already published a preliminary report based on nationality and location of cancer, and with data on Irish and Italian mortality received through the League of Nations to compare with our Massachusetts experiences with these nationalities we are extend-

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†For record and address of author see "This Week's Issue," page 460.

ing them. Other aspects of this very interesting matter are being studied co-operatively with the Social Service Departments of the Massachusetts General Hospital and the Boston Dispensary. Further, we are expanding the study, already published, from exhaustive data furnished by visiting nursing associations in various parts of the State on both the cancerous and the non-cancerous.

Another approach has been through general sickness surveys of communities. We have already published the results in a residential community (Winchester) and a rural community (Shelburne Falls) and are tabulating the data on 28,000 persons collected last summer in an industrial city (Lawrence). These give data on types of sickness and their economic distribution, the loss of time entailed, the medical care, and the like. As well as giving us data on the amount of recognized cancer and the resources utilized for it, we are getting an enormous amount of information which will help us in formulating programs for the other and even more formidable degenerative diseases where the public will no longer brook delay. Also, we have recently studied Wayland in an effort to advise in regard to a hospitalization problem, and at the request of the Overseers of the Poor of Cambridge plan a somewhat more elaborate sociological and morbidity study on three hundred families under their care. The recent chronic disease study in Boston by Dr. Haven Emerson is along these same lines.

Much clamor and evidence of activity, you say, without much clear idea of where it will all get us! True! But certainly a vast improvement on the penumbra of ignorance in which we were forced to formulate our cancer program.

So much for our program! Now is it State medicine? Again, what is State medicine? A definition that is much too simple and intelligible to be correct, I fear, is that state medicine is medical service to the individual at the expense of the community. By any such definition, State medicine has the sanction of usage from the days when spontaneous generation was young or even earlier. Our city, state and federal hospitals and clinics attached thereto, our city physicians (Heaven rest them and their thankless jobs), our "private" patients in hospitals who do not pay towards interest on invested capital, the beneficiaries of industrial accidents and sickness insurance, all these are examples of service which is ultimately paid for by the community. There are occasional grumbles and less occasional cacophonies as to the qualities of these services. But the general principle under which they are given is seldom questioned.

However, there is quite another definition of State medicine. It is, I think, in the mind of many, if not most, physicians. It is in general a vague feeling not formulated in words. If it becomes articulate, it is usually so only in small groups of similarly minded cronies. It is not dignified by formal presentation in professional assemblies. Here the term "State medicine" is enough. No questions are asked. Bolshevism is rife and the annointed turn piously toward the professional east.

But this vague harassing medical thought is of enormous importance since I feel it is the greatest single factor external to ourselves which renders the work of health officers futile. We must therefore try to look it in the face. It runs something like this: Eventually all doctors will be ordered how, when and where they are to give service by some remote, impersonal, autocratic, unsympathetic, unprofessional, governmental agency; for this service they are to be paid on a schedule, which it will take a course in higher mathematics to understand, and at a scandalously low wage. The dangers of this are the removal of the very essential motive of individual initiative which has been the basis of all advances in science and anything else, the giving of a generally hideously poor quality of service, and the starving of all physicians. The consummation of such a vision would, of course, be an unparalleled calamity.

It would seem to me that the former were a far more intelligent definition of "State medicine" if you are willing to allow this term to be applied to anything less obnoxious to the doctor than is holy water said to be to the devil. Then the cancer program is unequivocably State medicine. Under wise advice we have aimed to preserve and foster all the essential individual professional initiative inherent in private practice. We have attempted to add to this all the qualitative and economic benefits which come from group action. The pressure for this grouping is being felt the length and breadth of all gainful activities in America today from the farmer to the railroad magnate. The professions have protectively claimed that as they are above commercialism they are above such pressure. Specious, thoroughly specious! The thing to worry us is not whether it is proper for the State to interfere in the treatment of cancer in this way. The people have answered that. Rather is it for us to decide whether we will put our house in order so that cardiacs, arthritics, neurologics and the rest will get a level of service commensurate with what these same people, The People, are likely to demand, or whether through legislation they will introduce State medicine more aggressively into these much larger fields. For if the State Department of Public Health refuses a legislative mandate, it will be wiped off the slate and a more responsive department put in its place. Therefore, it would seem that the only salvation from the hideous medical dream which I have parodied is for the medical profession and the health officer to solve together these great inadequacies which are making for so much popular dissatisfaction today. But perhaps only in Heaven do the whole breed of the lions and the lambs lie professionally together.

AN OUTBREAK OF TYPHOID FEVER TRACED TO CHICKEN SALAD INFECTED BY A CARRIER*

BY HAROLD E. MINER, M.D.,† AND FILIP C. FORSBECK, M.D.†

THE first case of typhoid fever reported in 1928 to the Chicopee Board of Health was on June 23rd. The same day a physician requested typhoid vaccine to immunize individuals who were contacts with a suspected case of typhoid fever. These events led to an investigation by the local board of health and this department.

A preliminary survey disclosed an outbreak of gastro-intestinal disease in a group who had attended a wedding breakfast in Chicopee on May 30th. The first cases discovered were residents either of Chicopee or Springfield. It was soon evident that we were dealing with an outbreak of typhoid fever. Since no other cases of this disease had been reported previously in either city during the year, the obvious conclusion was that the infection occurred in connection with the wedding breakfast.

About fifty-six guests attended the breakfast and at least nine persons had food brought home to them. Twenty-eight cases of typhoid fever were reported from this group. The foods eaten by twenty-seven of them are listed in Table I. Table II is a statistical analysis of the foods eaten by the sick and well individuals. Column 1 lists the number of sick individuals who remember whether or not they had eaten a particular food. Columns 2 and 3 show the number and per-cent. respectively of those who knew they had eaten a particular food. Columns 4, 5, and 6 give similar data for the well individuals. The differences in per cent of sick and well persons eating each food is shown in Column 7 together with the standard deviations of the differences. Column 8 gives the ratio of each difference to its standard deviation. According to this analysis the first six foods may be regarded with more than average suspicion. The food which was almost certainly the mode of infection was not much more significant statistically than several other foods. However, both the ice cream and the rolls were parts of commercial lots, the balance of which was sold in the community and caused no illness. Potatoes and salad were served on the same plate. Individuals who thought they ate potatoes but not salad may have eaten a small amount of the latter inadvertently. Chicken salad was the only food eaten by all of the twenty-seven sick individuals. This information strongly suggested that the chicken salad was the mode of infection. The salad had been suspected early in the investigation because of the entire menu, this food lent itself most readily to infection. Chicken

TABLE I

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA
Salad	+	+	+	+	+	?	+	+	?	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Rolls	+	+	+	+	+	+	+	+	—	?	+	+	+	+	+	+	+	+	+	+	?	?	+	?	+	+	+
Ice Cream	+	+	+	—	+	+	+	+	+	+	+	+	+	—	+	+	+	+	+	+	+	+	—	?	+	+	+
Butter	+	+	+	—	+	+	+	+	—	?	+	+	+	+	+	+	+	+	+	+	?	?	—	?	+	+	+
Coffee	+	+	+	+	+	+	+	+	—	+	+	—	+	+	+	+	+	+	—	+	+	+	—	?	+	+	+
Potatoes	—	+	—	+	+	+	+	+	+	+	+	+	+	+	+	+	+	?	+	+	+	+	—	?	+	+	+
Oranges	+	—	—	—	+	+	+	+	—	?	—	—	—	—	+	—	—	—	—	—	+	+	—	?	—	+	—
Soda	+	—	—	—	+	+	+	—	+	?	—	—	—	+	+	+	+	+	+	—	+	+	—	?	—	+	+
Pickles	+	+	+	—	—	—	+	+	—	?	—	—	—	+	—	+	+	?	+	+	+	+	—	?	+	+	+
Doughnuts	—	+	+	—	—	—	—	+	+	+	+	+	+	+	+	—	+	+	—	—	+	+	—	?	—	—	—
Bananas	—	—	+	—	—	+	—	—	+	?	—	—	—	—	—	—	—	—	—	+	+	—	—	?	—	—	+
Other Cake	+	—	+	+	—	—	—	+	—	?	—	—	—	?	—	—	—	+	+	+	—	+	—	?	+	—	—
Wedding Cake	+	+	+	+	+	+	—	—	—	?	+	—	+	—	+	+	—	+	+	+	+	+	—	—	?	+	+	—

TABLE II

Food	1	2	3	4	5	6	7	8
Salad	25	25	100%	25	16	64%	36± 9.8	3.75
Rolls	23	22	96	24	15	63	33±10.7	3.42
Ice Cream	26	23	88	24	12	50	38±12.0	3.16
Butter	23	20	87	24	14	58	29±12.3	2.33
Coffee	26	22	85	23	13	57	28±12.5	2.23
Potatoes	25	22	88	24	13	55	33±12.1	2.72
Oranges	25	9	36	23	3	13	23±11.9	1.92
Soda	25	15	60	23	10	43	17±14.3	1.19
Pickles	24	15	62	23	11	48	14±14.4	.97
Doughnuts	26	14	54	22	10	45	9±14.4	.62
Bananas	25	6	24	23	4	17	7±11.6	.60
Other Cake	24	9	38	21	9	43	5±14.7	—
Wedding Cake	25	17	68	23	19	83	15±12.2	—

*From the Massachusetts Department of Public Health.

†For record and address of author see "This Week's Issue," page 460.

salad has frequently been the mode of infection in food-borne outbreaks of typhoid fever. Interest turned, therefore, to the individuals who had prepared the salad.

The salad was prepared the day previous to the wedding at the home of the aunt of the bride, a Mrs. D., who was helped by her daughter-in-law, Mrs. D. Jr., and a friend, Mrs. C. Mrs. C. was taken sick with typhoid fever on June 20, three weeks after the wedding breakfast. She was evidently infected at the breakfast. Suspicions pointed more strongly to the elder Mrs. D. than to Mrs. D. Jr. Mrs. D. Jr. had a negative Widal and gave no history or suggestion of having had typhoid fever. The three women admitted that Mrs. D. had had most to do with the preparation of the salad. The latter had a history of an illness some eighteen years before of about eight weeks' duration which was diagnosed as appendicitis. No operation was performed. Mrs. D. said she lost about fifteen pounds during this illness. Whatever the illness was, Mrs. D. had a suggestive Widal on June 26th, and a stool culture positive for Bacillus Typhosus on July 2nd. In our opinion, this carrier was undoubtedly the source of the outbreak.

In general the illnesses in this outbreak were severe. One death occurred among the reported cases. Another death occurred in a wedding guest operated on for what was diagnosed as appendicitis. A laparotomy was done, but the patient was in such poor condition that the operation could not be continued. The death certificate was signed as peritonitis with perforation. This incident took place before it was known that there was an outbreak of typhoid fever. In view of the epidemiological history the surgeon thought that this case might have been one of typhoid fever.

The incubation periods were 8, 9, 12, 13, 14, 15, 16, 16, 16, 18, 18, 18, 19, 20, 20, 20, 21, 21, 23, 23, 24, 24, 26, 26, 26, and 27 days with an average of 19 days. In addition to the reported cases there were at least five guests who had indefinite and undiagnosed illnesses some of which probably were typhoid fever. These five persons were not considered in this study.

Some difficulties were encountered in gathering information in the field. For example, many of the people interviewed spoke English poorly. In addition, considerable ill feeling had developed between relatives of the bride and groom, each side of the family blaming the other for the outbreak, though there was no foundation for this criticism. One or two physicians hampered the early investigation, but on the whole the medical profession co-öperated splendidly.

SUMMARY

About sixty-five persons attended a wedding breakfast or had food brought home to them. Among these at least twenty-eight cases of typhoid fever occurred during the period from eight to twenty-seven days after the breakfast. The mode of infection was chicken salad, the source a typhoid carrier.

ACKNOWLEDGMENT

The authors wish to acknowledge their indebtedness to the medical profession of Chicopee and Springfield as well as to the Boards of Health of these cities. Credit is particularly due Miss Gertrude M. DeWitt, Agent of the Chicopee Board of Health, for assistance in the field work.

USE OF ETHYL GASOLINE AS MOTOR FUEL DOES NOT INCREASE CARBON MONOXIDE CONTENT OF EXHAUST GASES

The use of gasoline containing Ethyl fluid as an automobile engine fuel does not affect materially the percentage of carbon monoxide contained in the exhaust gases, says the Department of Commerce, following a series of tests conducted at the Pittsburgh Experiment Station of the United States Bureau of Mines.

Public interst in atmospheric pollution by automobile exhaust gas and in the ventilation of vehicular tunnels makes it desirable to ascertain whether the use of modern automobile fuels is tending to change the amount and composition of the products of combustion. The United States Bureau of Mines, in co-öperation with the Ethyl Gasoline Corporation, has completed a series of tests to determine whether any significant difference exists in the carbon monoxide content of the exhaust gas produced by an internal-combustion engine when its fuel is changed from straight gasoline to the same gasoline containing Ethyl fluid whose active ingredient is tetraethyl lead. The conclusion is as stated above.—*Department of Commerce, Washington.*

VERMONT STATE MEDICAL SOCIETY

VARICOSE VEINS*

BY ALFRED T. BAZIN, M.D., F.A.C.S.†

THE subject of varicose veins might be considered time honoured as well as time worn. But of recent years a filip has been given to interest in the condition by the introduction of a method of treatment which is startlingly different to formerly accepted theories and practice.

Present day literature is filled with reports of hundreds and thousands of cases which have undergone successful treatment. Even the lay press has devoted its columns to the subject, and patients now present themselves with almost the demand for treatment by injection.

Before being engulfed in such a wave of enthusiasm it were well for us to carefully review the whole subject of varicose veins, determine the etiology and pathology of the condition and take cognizance of the pitfalls which may be laid for the unwary.

For the purpose of this paper varicose veins will be defined as a dilatation, with or without tortuosity, of the superficial veins of the lower extremities.

It will assist to classify (to a certain degree artificially) varicose veins into three types—

1. Idiopathic. 2. Symptomatic. 3. Compensatory.

Idiopathic—This is the term, for want of a better, which may be applied to those veins which become varicose for no demonstrable reason. They appear comparatively early in life, usually before the age of 30 and even in childhood. There is no associated cardio-respiratory disease, nor evidence of pressure upon, nor habitual constriction of, the veins.

There is oftimes a strong familial history of similar trouble, but although this implies an hereditary weakness of the vein walls or a predisposition to dilation of the veins, the actual condition is not congenital but acquired—it may be at a very early age. Congenital absence of valves has not been demonstrated.

Given this predisposition to weakness of the vein walls it is easy to see how any constriction (garters or encircling bands), pressure from without (constipation, pelvic tumours, pregnancy), reduction of arterial pressure or increase of proximal venous pressure (cardio-respiratory disease) may bring about engorgement and dilatation of the veins.

Thus the idiopathic insensibly merges into one class of the symptomatic.

But even without these secondary or activating causes idiopathic varicose veins are not uncommon.

Their first appearance is on the medial aspect of the lower leg from which point they spread up and down in the line of the internal saphenous vein and its tributaries. Frequently they involve the radicals and main trunk of the external saphenous vein and are situated posteriorly on the calf.

In 80% of cases they involve both legs; when affecting one leg only they as frequently are on the right as on the left. They are apparently as common in males as in females, although the general opinion is that females suffer more than males. This opinion is probably because of the greater liability of females to activating causes such as constricting bands, constipation, pelvic tumours and, of course, pregnancy.

It is commonly thought that occupations requiring prolonged standing are productive of varicosities; moreover that passive standing is of greater etiological significance than is active walking.

The varicosities may appear in the sites above mentioned and remain in statu quo. In many instances however, especially because of the continuance of some activating cause they may become progressively worse with dilatation to the internal saphenous opening, together with greater varicosity and tortuosity of the tributaries below the knee and dilatation of the numerous radicals about the ankle and foot, also dilatation of the short communicating branches through the deep fascia which connect superficial and deep venous systems.

Then and then only do symptoms present themselves. Because of the widening of the lumen the valves become incompetent. It has been proven that in these advanced cases—with the patient standing—the direction of flow is distal. It is only with the patient prone and leg elevated that normal proximal flow is resumed. The valves are for the purpose of directing the flow—not as formerly supposed for the division or diminution of hydro- or hemostatic pressure. With the valves incompetent the direction of flow follows the path of least resistance—with the development of the following vicious circle:—

The larger blood flow in the deep veins, impelled by arterial pressure through the capillary system and aided and supported by contraction of the skeletal muscles, passes up the femoral vein under considerable positive pressure. As it reaches the saphenous opening—the valves there having become incompetent and the pressure in the unsupported superficial veins being less—some of the blood passes from the femoral into the saphenous and thence down the leg, and either by communicating veins or in a reverse

*Read at the Annual Meeting of the Vermont State Medical Society at Burlington, October 11, 1928.

†For record and address of author see "This Week's Issue," page 460.

flow through the capillaries again reaches the deep or intramuscular venous system. This blood becomes more and more impoverished, more and more laden with products of tissue waste, hence, the sense of fatigue and weight, malnutrition of ligaments with associated flat foot, malnutrition of skin with pigmentation, eczema, ulcer from slight trauma, etc. Oedema is also present.

The marked improvement of nutrition which follows rest in bed with elevation of the foot is because this vicious circle is broken, and normal direction of flow in the superficial veins is re-established.

Symptomatic varicosity—

One class has already been referred to, i. e., constriction, pressure from without, habitual standing. These are probably but activating factors in the true primary idiopathic variety.

Even pregnancy, which has been blamed as the cause of many varicose veins is probably innocent, inasmuch as the study of a series in which varicosity was associated with many pregnancies the history determined the presence of the varicosities before the first pregnancy.

Another class, and one which is much more important in its bearing upon treatment, comprises—cardio-respiratory disease, arterial disease, and such conditions as are associated with poor arterial supply to the lower extremities. Almost invariably there are associated varicosities or dilatations of the venules. But these dilatations follow no general rule as to site of first appearance. They are usually distributed more or less equally on both sides, about the ankles and lower third of the legs. Contrary to the rule in the idiopathic class—oedema here appears early—frequently anticipating the appearance of the varices.

Compensatory

Whenever the deep intermuscular veins are blocked from whatever cause, the most common being thrombo-phlebitis, the whole or most of the return venous flow of the limb must be taken up by the superficial system. These superficial veins dilate in order to undertake this task and to "compensate" for the loss of flow through the deep veins.

The appearance of these varicosities is usually characteristic. Instead of being limited to one or both saphena trunks, the dilated veins form a network running and interlacing in all directions. In other words the superficial venules all participate in the formation of a collateral venous circulation.

Naturally these compensatory varicosities must not be interfered with or the venous return from the limb may be so interrupted as to jeopardize the life of the limb.

So important is it to recognize this condition that numerous tests have been devised—1st Trendelenberg—2nd Homans—3rd Functional test viz: Obliterating bandage with activity—4th History pointing to thrombo-phlebitis, i. e., painful, tender, swollen leg *followed* by appearance of varicosity, oedema for weeks or months following such a history.

Treatment—

Let us work backward in the consideration of these three classes—

Compensatory—

1. Absolutely no radical method of treatment is permissible even when compensation is but under suspicion.

2. A light elastic supporting, but not obliterating bandage is all that can be applied with comfort.

3. General habits of living—frequent rests during day on inverted couch or bed.

These varicosities are a "cross" which must be borne with fortitude.

Symptomatic—

Varices associated with defective arterial circulation do not improve with radical measures. If obliterated they reappear and after each attempt the circulation of the limb is so much the more impaired.

Idiopathic—

The introduction of the injection method of treatment almost renders unnecessary the consideration of palliative measures in treatment. Moreover in these days of short skirts and silk stockings demand for treatment of a varix may be founded entirely on cosmetic reasons—and this demand will not be satisfied by the application of a bandage or elastic stocking.

Again—the radical obliteration of varices in the early stages may prevent the development of a greater degree of varicosity.

But still, under palliative treatment must be considered that very important step of thorough complete physical examination with the treatment and removal of all activating factors, constrictions, pressure, improvement of general vascular tone, correction of faulty habits or occupation, etc.

Finally, to determine whether the varicose condition has progressed beyond the hope of relief from palliative treatment the test of "impulse on coughing" may be employed.

Radical treatment dates back many years, and has developed through many stages, i. e., ligation and resection of individual varices; multiple ligation of the main saphenous trunk; Trendelenberg's operation of ligating the internal saphenous close to the saphenous opening; saphenectomy (a) by long incision, (b) by stripping; Mayo or Babcock; Schede's circular incision; Freidel's spiral incision; flap operation for multiple varices with resection from deep surface, and division of communicating branches.

With all of these operative measures—rest in bed is essential and the dangers of embolus must be considered. It is impossible to ligate a vein

without thrombus forming between the point of ligation and the first proximal tributary. This thrombus is not necessarily firm—nor does it necessarily organize. It may resolve and during resolution in the second week embolus may occur.

It has been estimated that pulmonary embolus occurs once in every 1,000 operations, and for operations upon vein trunks the incidence is higher.

The protagonists of the injections method claim almost complete immunity from this danger—(two cases only have been reported)—and explain that the injected solution does not produce a thrombus (the solutions do not clot blood in vitro) but an intense inflammation of the intima and other coats of the vein with swelling and partial or complete obliteration of the lumen. On the damaged intima blood clot forms, is firmly adherent, and because of the inflammatory reaction rapidly and completely organizes.

Other advantages offered are—

1. Ambulant treatment—non interference with work.
2. Avoidance of anaesthesia, its discomforts and dangers.
3. Early and progressive alleviation of the symptoms for which relief was sought.
4. Avoidance of scarring.

HISTORY. In July 1920, in *La Presse Médicale*, Marseilles—J. A. Sicard published an article describing this method and his results in numerous cases. Briefly it may be stated that whilst employed in a Military V. D. hospital during the war (1917) he observed that the intravenous injection of arsenical compounds was occasionally followed by a painless obliterating thrombophlebitis of the punctured vein. Further study led him to believe that it was an excess of sodium carbonate which produced this reaction.

After the war he experimented with this substance in the treatment of varicose veins, but abandoned sodium carbonate as being too caustic and too toxic.

He finally concluded that a satisfactory result was obtained with sterile solutions of sodium salicylate in strengths of 20, 30 and 40 per cent.

In 1922 and again in 1926 in *La Presse Médicale* (Paris) he, in association with Paraf, Lemayez and Gaugier, published the results of many hundred injections.

These publications attracted attention, more particularly in continental Europe and in England, and different authors reported their experiences not only with the salicylate solutions but with other substances, notably quinine hydrochloride, mercury biniodide, mercury perchloride, sodium chloride, glucose, etc.

From malarial districts in the tropics came reports, not only of the previously unrecorded observations that at times an obliteration of the vein followed injection of quinine, but in a few instances that this had been purposely used in the treatment of varices.

There has now accumulated a wealth of literature upon the subject.

Contraindications to Injection—obliteration generally—

1. Any evidence, or even suspicion, from history, physical examination, or various tests that the varicosities are compensatory because of blocking of deep veins, or are symptomatic of arterial or other disease.
2. Old persons in enfeebled health.
3. Deficient kidney function.
4. Diabetes.
5. Hypertension.
6. Recent phlebitis of the varicose veins (lighting up).

Contraindications to specific solutions will be considered later.

TECHNIQUE

The objects to be attained are—

1. The injection *into* the vein of the chosen solution, hence the vein must be moderately filled with blood when the needle is introduced.
2. The prevention of undue dilution of the solution by excess of blood in that portion of vein injected.

In other words, the vein should be full during puncture but moderately empty during injection.

3. The prevention of necrosis of the surrounding tissue or overlying skin.

This necrosis may be produced because of the point of the needle passing completely through the vein or varix or because of backflow on withdrawal of needle after injection.

This necrotic area, about 1 c.m. in diameter takes long to heal and leaves a deeply pigmented, pitted scar.

4. Control of the area of reaction.

Small doses are essential in order that there shall not occur overflow through the communicating branches to the deep veins or through the saphenous opening to the femoral.

1.5 to 3 cc. is the dose to be employed at one puncture with a total of 6 cc. at one sitting.

The obliterating reaction from such a dose usually involves from 4 to 6 inches of vein.

To meet these technical requirements various suggestions have been made. These have been tried out by my senior house surgeon, Dr. H. G. Pretty to whom I am largely indebted for the material of this contribution.

A 10 cc. Record syringe is used and the total dose for the sitting is drawn into the barrel. Very fine short needles are essential, one needle for each contemplated puncture.

After sterilization of the surface with ether and alcohol, the needle is entered through healthy skin to one side of the varix and enters the vein obliquely. After injection and upon withdrawal of the needle, pressure is exerted

to prevent leakage from vein into paravenous tissue.

The nicety of manipulation requires a relative position on the part of the patient which will not force the operator into an awkward and hence unsteady posture.

Seating the patient on a chair which is placed upon a table is found very convenient. In fact Forrestier of Aix-les-Bains—he of lipiodol fame—has had devised by Vacheron, for use in outpatient departments a surgical table on high standards which can be readily lowered from the sitting to the recumbent position. The old fashioned Harvard examining chair also works admirably.

The patient presses his weight upon the foot. This fills the vein and permits of puncture. Proof that the point of the needle is properly placed is the withdrawal of a drop or two of blood into the barrel of the syringe. The patient then relaxes, the vein partially empties and the injection is made.

In many instances and particularly with certain solutions, the patient immediately experiences a painful cramp in the calf of the leg and desires to lie down. In a few moments this pain passes off and the patient may then move off.

At the time of the cramp it may be noticed that the varix is in spasm and empty and that the overlying skin shows "goose-flesh" appearance.

As a rule—two days elapse before the characteristic reaction is evident. The vein becomes painful, tender and can be traced as a cord.

The degree of reaction varies. It may be an inflammation of intima only—of intima plus obliteration—or of all the coats together with periphlebitis.

In the last condition the pain resulting may demand the recumbent position with fomentations—either hot or cold—for its relief.

The treatments are repeated at intervals of from four to seven days according to the degree of discomfort experienced.

At one sitting one large varix may be injected—or three or four small ones.

In every instance it is imperative that haste should be made slowly. It is unwise to treat both limbs at the same sitting.

The first injection should be made about the middle of the leg and progress should be proximal, great care being taken upon approaching the saphenous opening. Rarely is it necessary to work distally from the midleg, except for small varices about the malleoli which may persist after obliteration of the main trunks is completed.

Before beginning treatment the patient should be warned of the expected reaction—

1. Within 12 hours there is a sense of fullness or engorgement upon rising from the recumbent position.

2. Within 48 hours the vein is swollen and tender to touch. There may even be so much para-venous reaction that rest in bed for a few days is required.

There may be general oedema of the leg, necessitating suspension of treatment and possibly rest in bed. This is due to overflow through communicating veins into and implicating deep veins. It must be carefully guarded against by the use of small doses. It might result in serious disability.

Necrosis of skin will follow leakage of solution into para-venous tissue. Ecchymosis—will be due to leakage of blood into paravenous tissue. Staining of the skin along the course of the vein is not infrequent but disappears in the course of two months.

Passing to a consideration of the various solutions used and recommended—

1. Sodium Salicylate—Chemically pure Sodium Salicylate in solution of 20, 30 and 40 per cent. Available in ampoulles in sets. These solutions do not precipitate, and need not be heated before use. They should be discarded if discoloured.

This is the drug most commonly employed. It has certain disadvantages and limitations—

(a) Idiosyncrasy. First injection should be 0.5 cc. of 20% solution. Note ringing in ears, nausea (not psychic) and extent and severity of local reaction.

If suitable, advance to higher strengths as rapidly as possible with a maximum of 4 cc., 40% solution at one sitting.

(b) Sodium salicylate always causes cramp in calf immediately upon injection and this is severe for two to five minutes. On the other hand the reactionary pain and tenderness is less marked than with quinine.

(c) Sodium salicylate is uncertain in its reaction.

This may be excessive both as to severity and especially as to extent or it may be altogether or almost absent—in which latter case a switch must be made.

2. Quinine Hydrochloride—(Génévrier).

Quinine hydrochloride grms. IV, Urethane grms. 2, aq. distil 30 cc. Available in ampoulles or may be prepared in rubber capped "vaccine bottle". Sterilized by boiling. Requires heating before use as quinine crystals precipitate out.

(a) First dose 0.5 cc. to determine idiosyncrasy—tinnitus, headache, vomiting, appearance of rash.

(b) Quinine solution contraindicated during pregnancy for fear of abortion, and treatment suspended during menstruation because of crampy abdominal pains.

(c) Maximum dose at one seance 4 cc.

(d) When satisfactory reaction does not take

place, especially in large varix, quinine solution may be injected about the vein or into its walls with good results.

3. Mercury Biniodide.

Mercury biniodide 1%, sodium iodide 1% in distilled water. This solution is recommended by some in patients showing a positive blood Wassermann.

In my opinion this is no argument. Treating the varicosities is one thing—treating syphilis is another—the two can hardly be properly treated by the same procedure.

(a) Initial small dose to determine idiosyncrasy to mercury as evidenced by salivation.

(b) Maximum dose at one sitting 2 cc.

(c) Less painful during injection than is the salicylate (absence of cramp) but possibly more prolonged tenderness of reactionary changes.

(d) Leaves a stain or line of pigmentation over vein—which persists for several months.

I will not discuss the use of other solutions, the above three are those most commonly employed.

Learn accurately the use and indications of two viz: salicylate and one or the other of quinine or biniodide and you are prepared to successfully treat all or almost all suitable varicosities.

From this description you might assume that the procedure is easy. Let me assure you that it takes the greatest attention to detail to avoid disaster.

What I fear most from the popularization of injection—obliteration is:

1. Inadequate general examination of patients with consequent injection of compensatory or symptomatic types of varicose veins.

2. Extension of obliteration to the deep veins by the employment of too large a dose or too strong a solution, or with the patient in improper posture.

If this warning is regarded as the "grain of salt" to be taken with the "story" of the method I will consider my efforts fully repaid.

Discussion

Dr. Wheeler: *Mr. President, Ladies and Gentlemen*: I am considerably embarrassed at this moment because I can't discover that Dr. Bazin has left me a word to say. He seems to have exhausted the subject pretty thoroughly. I want to thank him, as I am sure we all do, for his very excellent address covering the ground so thoroughly, and for giving us so much information. I am hardly fitted to discuss the subject because I have had no practical experience in the injection treatment. I have removed varicose veins from time to time, and generally successfully, as far as I was concerned. I don't believe, in view of the fact that the time is not quite unlimited this afternoon, and knowing who is to come after me, that I had better take up any more time. I thank you for calling on me.

Question: Do your patients walk in and out of the clinics? Do they go home after the treatment?

Dr. Jenne: How long after thrombo-phlebitis in the varicose veins would it be safe to use this method?

Question: Do you inject both legs each day?

Question: Would you mention in detail the relative value of different solutions, sodium chlorides, etc.?

Dr. Bazin: It is an ambulant treatment. The patients do walk in and walk out. They might want to lie down for a few minutes. They get the cramp in the calf, more with the salicylate solution than with the biniodide or quinine. We have not confined our solutions to the sodium salicylate, which is most popular and effective. 20-30-40 per cent. solution. No matter what solution you choose, start with the small dose. The reaction from salicylate solution is very variable, with some a tremendous reaction. Start with small ½ cc. and if you get a reaction, extending over three inches, continue with the weak solution. If you get no reaction from the salicylate, you have to switch to something else.

The quinine hydro chloride formula is a 13% solution of quinine. It does not cause so much cramp but its reaction, later reaction, is more prolonged. Mercury biniodide, 1% solution with potas. iodide 1%. "Mercury should be used with those cases showing a positive Wasserman." I don't think there is anything in that. I don't think it is possible to treat latent or tertiary syphilis by the same dosage as you use in obliterating varicose veins. The patients ought to be warned as to the amount of pain, or discomfort they are going to have. For about 48 hours there is no pain except when the patient rises from the recumbent position. In about 48 hours the part begins to get quite sore and tender to touch. If one is standing, or using a limb in which varicose veins have been injected, there is an increased sorenesss. One of the advantages of this treatment being that it is ambulant and does not prevent absence from occupation, the treatment wants to be carried on in such a way as not to lose that advantage. If you treat one leg at a time the patient has the other leg to use, and the patient can stand on one leg and ease the injected one, and that permits the patient to go on with his occupation without any discomfort.

How long after a phlebitis? I expect that question refers to an infected thrombophlebitis in a varicose vein. It is impossible to tell whether an infection has died out. Take a gunshot wound, complicated with bone injury and involvement of the nerve trunks, experience taught that a year should lapse before that wound is opened up again for suture of the nerve. It depends on the severity and duration of infection in each individual case. Wait until

all evidences have entirely disappeared, or been absent for certainly a month, before using the injection obliteration method.

OBITUARIES

DENNIS JAMES CARROLL, M.D.

Dr. Dennis James Carroll, one of the best known physicians of Rutland County, died at his home in the City of Rutland, Vt., on Friday, January 18, from lobar pneumonia which followed a heart attack that occurred three days before, while he was about his professional duties.

Dr. Carroll was born at North Hebron, N. Y., on July 20, 1885, was the son of Dennis and Mary (Murtha) Carroll. He received his preliminary education in the graded and high schools of Fort Edward, N. Y., and his medical education at the College of Medicine of the University of Vermont, Burlington, graduating in 1910. After his graduation he served his internship at the Fanny Allen Hospital, Winooski, Vt., and the Lying-In Hospital, New York City.

On February 18, 1914, he married Miss Mary Kelleher of Fort Edward, N. Y., and they located at Vergennes, Vt., where he practised his profession until he was commissioned for service in the Great War in the Medical Corps of the Army with the grade of First Lieutenant. Dr. Carroll's service was mostly at Fort Oglethorpe, Ga. During his service he contracted a serious circulatory disturbance, which materially incapacitated him during the remainder of his life and ultimately caused his death.

After his separation from the Army in 1919 he located in the City of Rutland, Vt., where in ten years he built up an extensive general practice.

Dr. Carroll took much interest in the affairs of his city; for many years he had been a member of Rutland Post, No. 31, The American Legion, and at the time of his death was an active and sympathetic member of its Service Committee. He was a member of the Rutland Clinical Club, Past-President of the Rutland County Medical and Surgical Society, member of the Vermont State Medical Society and Fellow of the American Medical Association. He was a member of the Appointed Staff of the Rutland Hospital and one of the Lecturers in the Nurses Training School of that institution.

Dr. Carroll was also a member of the Rutland Council, Knights of Columbus, and a member of the Fourth Degree Knights of Columbus Council of Fort Edward, N. Y., a member of the B. P. O. E., Catholic Order of Foresters, the Holy Name Society and of the Rutland Exchange Club.

Dr. Carroll gave freely of his services to those unable to pay and, although he was far from strong and was often painfully reminded of his cardiac condition, he was never unheedful of a call to serve his fellow man even though well aware that he would receive no monetary remuneration. Dr. Carroll spent no mean sum each year in the charities in which he was interested.

Because of his uniformly courteous treatment of neighbor, confrère and patient, Dr. Carroll won for himself the title of *gentleman* in the most literal sense of the word.

Funeral services were in the Church of the Holy Innocents of which he was an active and faithful communicant and burial was the cemetery of South Glens Falls, N. Y.

WILLIAM LINDSAY, M.D.

Dr. William Lindsay of Montpelier, Vermont, died at Heaton Hospital, Montpelier, Jan. 22, 1929, aged 63 years.

Dr. Lindsay was born at St. Mary's, Ontario, the son of John and Ann Lindsay. He attended Ottawa Normal School, and after two years' service as a teacher, enrolled as a student of medicine at McGill University from which institution he received the degree of Doctor of Medicine and Master of Surgery. He first practiced his profession in Georgia, Vermont. In 1898 he located in Montpelier where for thirty years he served the people of the city and surrounding territory as a general practitioner and surgeon. During the entire period of his residence in Montpelier he was a member of the surgical staff of Heaton Hospital, and for many years acted as city health officer. He was always an active member of the Washington County and Vermont State Medical societies and served both societies in official capacities. Dr. Lindsay was a Fellow of the American College of Surgeons, and served in the World War with the rank of captain; as a member of the Reserve Officers Training Corps he held the rank of major. In addition to his professional associations he was affiliated with the Independent Order of Odd Fellows, and was an active and loyal member of Trinity Methodist Church.

The highest ideals governed Dr. Lindsay's professional conduct. He responded to the demands of his large and widely scattered practice in accordance with the best traditions of the medical profession, always unselfish and ever ready to help those in need of his services. By such a life of service and by his loyalty and strictly ethical conduct, he was endeared alike to his patients and to his fellow physicians.

He is survived by his wife and his mother and by four children, Mrs. D. G. Proudfoot of Detroit, Michigan, Mrs. Charles E. Shepard of Lamars, Iowa, W. Douglas Lindsay, a medical student at the University of Vermont, and Beatrice, a student at Montpelier High School.

N. E. AVERY, M.D.

Dr. N. E. Avery of Barre passed away at the Barre City Hospital on Feb. 9, 1929, after an illness of about three weeks.

His untimely death was caused by a slight wound in the forehead, resulting in streptococcic septicemia.

Nathan Elmore Avery was born in Norwood, N. Y., on Jan. 30, 1871. After graduating from the Norwood high school, he took up work as a telegraph operator. A few years later he entered Potsdam Normal School, graduating in 1894. He then taught school at Champlain and West Chazy, N. Y., and was later principal of several high schools in that state.

In 1902, with a wife and family to support, he entered the department of medicine at the University of Vermont. The struggle of Dr. Avery for a medical degree was typical of many men of thirty years ago. Working as night operator and ticket agent at the Union station in Burlington and going to school day times, he completed the course in four years, graduating in the class of 1906.

Following his graduation he practiced in Warren, Vt., for a few months and in May of 1907 he located in East Barre where he became a leading and much loved citizen.

He served as school director of Barre town for several years and was a member and regular attendant of the East Barre Congregational Church.

He was a Mason, Forester, Woodman and at the time of his death was the sachem of Wuchosen tribe of Red Men.

He belonged to Washington Co. and Vermont State medical societies.

Dr. Avery was married on July 1, 1895, to Harriette M. Shaughnessy, who survives him with four children, Dr. Roscoe Avery of Barre, Dr. Leland

Avery of Island Pond, Mrs. Alice Spaulding of East Barre and Miss Lillian Avery of Barre, a teacher at Goddard Seminary.

MISCELLANY

OFFICERS OF WASHINGTON COUNTY MEDICAL SOCIETY

J. W. Stewart—Barre, President.
A. T. Marshall—Randolph, Vice President.
C. H. Goyette—Barre, Secretary and Treasurer.
O. G. Stickney—Barre, Auditor.
H. H. Hayward, Wm. Lindsey, J. H. Woodruff—Censors.
Delegates for 2 years: J. A. Wark, L. A. Russlow, E. A. Stanley.

NEWS ITEMS

Dr. and Mrs. C. H. Goyette of 2 Park Street, Barre, announce the birth of a son, Roderick Mathew, at the Barre City Hospital, January 26, 1929.

Dr. and Mrs. M. D. Lamb of Barre have been confined to their rooms with "Flu."

Dr. R. E. Avery of Barre has recovered from the "Flu."

Dr. J. W. Jackson of Barre has gone to his winter home in Mississippi.

The winter meeting of the Washington County Medical Society was postponed because of the epidemic of influenza. Sincerely yours,

WM. G. RICKER.

BURLINGTON AND CHITTENDEN COUNTY CLINICAL SOCIETY

A meeting of the society was held at the Medical College, Jan. 10, 1929, as the guests of the Rutland Railroad surgeons. Dr. Arthur M. Dickenson of Albany, N. Y., read a paper on "Bone Tumor."

The Regular Monthly meeting of the Society was held at the Medical College Jan. 31, 1929. The paper of the evening was "Advances in X-Ray Diagnosis" by Dr. Douglass Roberts of Hartford, Connecticut. Dr. Roberts had some exceptionally good lantern slides to illustrate his paper.

W. T. REES, M.D.

UNIVERSITY OF VERMONT MEDICAL COLLEGE NOTES

Dr. J. B. Wheeler, Professor Emeritus of Surgery, had the misfortune to fall last month and received a fractured hip. He is convalescing satisfactorily at the Mary Fletcher Hospital.

Dr. P. E. McSweeney, Professor of Obstetrics and Gynecology is seriously ill at the Bishop DeGoesbriand Hospital. He developed a mastoid abscess and erysipelas following an attack of Influenza.

Midyear examinations were held at the Medical College during the week of January twenty-eighth. Classes have again been resumed.

The extra-mural group of seniors who have been appointed to the different State institutions and with various preceptors throughout the State have returned to classes and the second group of students have taken their places. This plan of giving the seniors extra-mural work for one semester was initiated this year with the hope of increasing the clinical facilities and bringing the student into contact with general practice to a great extent. As far as can be ascertained at the time, the plan has been quite successful and the student has benefited considerably.

DEPARTMENT OF PUBLIC HEALTH
January, 1929.

Reports of communicable diseases received during the month of January are as follows: Chickenpox, 82; diphtheria, 11; German measles, 10; influenza, 1657; measles, 121; mumps, 481; scarlet fever, 43; smallpox, 10; tuberculosis, 17, and whooping cough 116.

The Laboratory of Hygiene made 1,125 examinations in the month of January divided according to the following table:

Examinations	
For diphtheria bacilli	202
For Widal reaction of typhoid fever	18
For malarial parasites	0
For tubercle bacilli	247
For evidence of syphilis	267
For gonococci in pus	93
Of blood for contagious abortion in cattle	35
Of water, chemical and bacteriological	34
Of water bacteriological	107
Of milk, market	30
Of milk submitted for chemical only	2
Of milk for microscopical only	22
Of foods	17
Of drugs	0
For the courts, autopsies	1
For the courts, miscellaneous	13
Autopsies to complete death returns	1
Miscellaneous examinations	36

In the Division of Venereal Disease, 50 cases of gonorrhea were reported, 55 cases of syphilis. Seven patients reported for intravenous treatment. Seventy-one gonorrheal and 135 Wassermann outfits were distributed.

The nurses in the Poliomyelitis After-care Division saw 37 patients, made 38 home visits, fitted 8 new pieces of apparatus, made 10 orthopedic corrections to shoes and visited three doctors. Fourteen patients were discharged from the hospitals and six patients admitted to hospitals.

Sales amounting to $196.46 were made by the vocational teacher. An exhibit of Vermont handicrafts was sent to the library at Brockton, Mass., where an exhibition of handicrafts of New England was held. A consignment of articles has been sent to the Sandhill Women's Exchange at Pinehurst, N. C.

The nurse in charge of the Maternity and Infancy Division made ten visits in seven towns, and instructions on child care have been given in five towns. Mothers' classes were held in two towns.

The following bills relating to medical subjects and of interest to the Department of Public Health have been introduced into the present session of the Legislature:

H. 37—Provides that towns may appropriate money for the erection, equipment, or support of any non-sectarian hospital within the county. This bill has passed the House.

H. 38 and H. 48—Bills proposing to include a chiropodist on the Board of Medical Registration. This bill is under consideration.

H. 55—Attempt to repeal the Act which provides for publication of vital statistics in the town report. This bill has been killed.

Bills relating to medical fees under the Compensation Act have also been introduced.

S. 19—Removing the restrictions on locations of burial grounds.

MEDICAL PROGRESS

RECENT PROGRESS IN PHYSIOLOGY

BY PERCY G. STILES, PH.D.*

"*THE Basis of Sensation.*"[1] This is the title of a small but significant book. The author, E. D. Adrian, is one of the active group of physiologists in Cambridge, England. He here presents in condensed form the results accumulated in the course of several years of research in the field of the sense-organs and their nerves. The studies described are objective in character. The first point to be stressed is that the impulses passing along motor and sensory nerves cannot be different in any important respect. They produce unlike results because they arrive at different destinations. They are to be detected in nerves of both classes by the same technique, the use of a suitable galvanometer.

Not very long ago it was our habit to think of nerve-impulses as variable in their intensity. But it has been shown that such variation is quite limited and in no case enables an impulse to reflect the strength of the stimulus which has originated it. Nerve-fibres are not like wires which can be pulled with more or less force; they are more like powder trains which flare up with the same intensity whatever the means used to kindle them. How, then, do we recognize so many degrees of sensation? Two factors are at once suggested: the number of fibres conducting and the frequency of the impulses in each. Adrian and his colleagues have proved that these features are really demonstrable.

The galvanometer record obtained from a nerve of any size may be difficult to interpret owing to the fact that the impulses in the numerous fibres may not be synchronized. The ideal preparation would seem to contain only one functioning fibre. Incredible as it may appear this elementary condition has been realized. A frog's nerve is prepared with an associated muscle. Then the muscle is dissected away until the small remainder still attached to the nerve contains one and only one receptor organ. Such a receptor (muscle-spindle) is served by a single nerve-fibre. If tension is applied to the minute bit of muscle, impulses pass up this fibre and the galvanometer records their sequence.

The detection of activity in a solitary fibre buried among hundreds of its fellows in a nerve has been made possible by the use of amplifying devices first made for the radio. It is found that as the stimulus applied is increased the ascending impulses follow at shorter and shorter intervals. A limiting frequency is often reached and it is much short of the maximum capacity of nerve-fibres to conduct successive impulses. That is to say, the limit is imposed by the sense-organ rather than the nerve. As a weight hung upon a muscle may excite the receptors so it is possible to stimulate isolated receptors in the skin by the contact of a fine point.

When a constant pressure or tension is applied to a tissue containing sensory terminals the frequency of the resulting impulses is not sustained but diminishes. The falling off is quite unequal in different cases: it is gradual when a muscle is stimulated and rapid for the skin. This is shown to be in harmony with other observations. Postural reflexes require that the flow of proprioceptive impulses from the muscles shall not readily fail. We soon cease to feel steady pressure upon the skin. We say that the sensory mechanism of the skin exhibits a quick adaptation to existing conditions and it is of extraordinary interest to have the fact objectively pictured in Adrian's records.

Motor Discharge. From the same laboratory we have a study of the action of solitary motor fibers[2]. The nerve dealt with was a small strand tributary to the phrenic which is distributed to one half of the diaphragm. The experimental animal was the rabbit. Making use of a microscope the investigators found it possible to cut away the fibers of this nerve until only three or four were left undivided. As the impulses from the respiratory center came down to the point operated on they were stopped in all the fibers excepting those uninjured. Records were made from the nerve distal to the attenuated part using apparatus of sufficient sensitiveness to indicate the activity of even a single neurone.

In several cases there seemed to be no doubt that only one fiber retained its conductivity and spanned the gap. During quiet breathing the action currents in this fiber were detected in regular succession with a frequency of 20-30 per second. It was a simple matter to cause more energetic inspiratory efforts; this change promptly followed the clamping of the trachea. During the more vigorous use of the diaphragm the frequency of the motor impulses rose to 50-80 per second. When artificial stimulation is applied it is found that the response of the muscle to such rates as 20-30 is in the nature of an incomplete tetanus. With frequencies of 60 or more the tetanus is smooth and complete. The force of the contraction also is approximately doubled.

It may be noted that the parallel between sensory and motor nerves in action is striking. In both the effect produced by stimulation depends primarily on the number of fibers participating. In both the effect augments up to a certain point as the frequency of the successive impulses is increased.

Stair-climbing. There have been many measurements of the metabolic cost of various mus-

*For record and address of author see "This Week's Issue," page 460.

cular performances. A research carried out by Benedict and Parmenter[3] is remarkably clean cut. The subjects were college women and the chief attention was given to the comparative expenditure of energy in horizontal progression, in climbing and in going down a flight of stairs. The estimates were based on data secured by the use of a portable respiration apparatus. It appears that about as much fuel is used in raising the weight of the body one foot as in carrying it along 15 feet on a level path. Descending a given distance taxes the system as much as moving five times as far horizontally. The suggestion is made that these ratios may be useful in determining how much exercise shall be prescribed under various conditions.

Cutaneous Respiration. According to the textbooks there is a small respiratory exchange at the surface of the body, the amount being naturally unequal in different species of animals. A recent study by Shaw[4] opens a new aspect of this matter. He finds that with cats the gaseous exchange at the external surface is about 1/200 of that taking place in the lungs. There is a reasonable ratio (respiratory quotient) between the carbon dioxide and the oxygen. But he has gained evidence that this process is not an affair in which the circulating blood is concerned; the gases are not passing through the skin as through an indifferent membrane. What is measured is the actual metabolic process of the superficial, living cells.

The skin therefore appears to constitute an impermeable barrier between the air and the blood. We have to consider that the normality of the blood depends on its equilibrium with the alveolar air and not with the atmosphere. When we attempt to apply these findings for the cat to the human system we have to reckon with the sweatglands. It has long been known that when there is profuse perspiration a rather large quantity of carbon dioxide leaves the skin. This is doubtless derived from the blood. It escapes with the secretion while there is no means by which oxygen can enter against the current.

A peculiar Ciliary Mechanism. Parker[5] has described a singular organization of the ciliated epithelium lining the oviduct of a turtle. The common picture of the situation in such a passage has been as follows. The effective beat of the cilia is directed toward the exterior. It is such as to promote the descent of the ova. The motile sperm are supposed to become oriented with their heads toward the body-cavity and as "live fish" to "swim upstream." According to this conception they must propel themselves with such vigor as to ascend more rapidly than the cilia set them back.

Parker found that the sperm of the species studied could not make headway against the prevailing current: they were invariably carried outward. He had naturally in mind the possibility of a temporary reversal of the ciliary stroke such as he had demonstrated for the sea-anemone. But he obtained no evidence that such a reversal could be obtained under the influence of seminal secretion. He found that he must seek a different explanation of the obvious fact that sperm-cells do make their way up the tube. The discovery followed a painstaking examination of the entire lining of the oviduct.

In a certain position there was found a narrow longitudinal strip of epithelium which, so far as its cilia were concerned, was of a polarity opposite to that of all the rest. Fluids or particles in contact with this strip were thrust upward instead of downward. The mechanism seems bound to be efficient. Given great numbers of sperm some must surely travel along the special rut adapted for their conveyance. At the same time the eggs which are few and large will be affected by the great majority of the cilia encouraging their descent. The possibility that cilia in other animals and other localities may have such differential arrangements is a most interesting one.

"Stream-lines." A curious mechanical possibility connected with blood-flow in short, wide vessels has been pointed out by Copher and Dick[6]. It has been natural to assume that when blood passes along a channel it must be well mixed. Evidence is now presented that in the portal vein parallel strands of current may run side by side with relatively little mingling. The investigators have shown that a dye introduced into the splenic vein finds its way almost entirely to the left lobe of the liver where it is later found concentrated. Dye injected into a vein of the small intestine becomes localized in the right lobe of the liver. Blood from a given branch of the portal vein may therefore preserve its integrity to a great degree and be diverted into a particular passage when the place of subdivision is reached. The picture of currents which fail to mix recalls what is seen below the confluence of certain rivers. In a more recent communication[7] the authors have called attention to differences in the composition of bile secreted by the right and left lobes of the liver respectively. Such differences may be secondary to the peculiarities of the blood supplied to the two lobes.

Chemical Effects of Light. This is a subject which occupies an increasing space in the literature. It is not long since the relation of radiant energy to photosynthesis in plants was almost the only illustration which could be given. The influence of light on Vitamine D and rickets is now being actively studied and still other instances of a similar sort are reported. Reference may be made to a case in which light is not helpful but deleterious. The paper is by Rask and Howell[8]. It has to do with the toxic action of hematoporphyrin, a derivative of hemoglobin. The remarkable fact is that this compound in ordinary amounts is harmless to animals receiving it provided they are kept in the dark. When they are brought into the light the skin

quickly becomes edematous. This condition appears to withdraw so much volume from the general circulation that a fatal collapse, as though from hemorrhage may follow.

The observations of Rask and Howell have shown that simple exposure of hematoporphyrin solutions to light does not make them toxic. It is more probable that hematoporphyrin combines with some constituent of the cells to form a new compound subject to decomposition by light. This new body does not migrate freely in the system. On this point we have the following evidence. Two isolated hearts were arranged in tandem, one in darkness and the other in light. A perfusing fluid containing hematoporphyrin passed through them in succession. The heart in the light was killed but the perfusate passing from it to the second had no unfavorable effect. The "photodynamic action" illustrated is therefore a local one.

Fatigue and Endurance. An elaborate study of the conditions attending prolonged activity in dogs calls for notice[8]. If the results reported are somewhat confusing they at least emphasize the danger of sweeping generalizations, of attempting to account in a simple way for states which are essentially complex. Dogs were made to run in a tread-mill at moderate speed until profoundly exhausted. Analyses of the blood were made with reference to glucose and lactic acid. Normal animals were compared with those which had undergone various operations. The effect on fatigued animals of injections of adrenalin was tested.

It is commonly taught that fatigue tends toward one or the other of two types. An intense spurt is held to end in the contraction of a great "oxygen debt" and a large accumulation of lactic acid. Less strenuous work, continued for a long time, is supposed to lead to a type of fatigue in which a lowering of blood-sugar is a well-marked feature. The dogs in the present series of experiments did not illustrate either condition. They often showed extreme prostration when the percentages of lactic acid and sugar in the blood were not distinctly abnormal. The authors are properly cautious in their statements for there are many alternative possibilities. They point out that the cause of an animal's collapse may sometimes be localized in the central gray matter rather than in the muscles and circulating blood.

Injections of adrenalin in optimal amounts were found distinctly helpful to exhausted animals. Such animals renewed their running and performed from 17 to 44 per cent. of the original score before becoming incapacitated for the second time. This reinforcement of the neuromuscular system could not be explained in any great degree as a mobilizing of sugar. (Intravenous introduction of glucose had conspicuously failed to benefit the tired dogs.) It is more probable that the adrenal principle acted by bettering the circulation and actually increasing the working capacity of the muscles themselves. Such a possibility has been indicated by the studies of Gruber.

The power to run in the treadmill before and after denervation of the heart and the adrenals was carefully compared. The loss of endurance was most striking; only short runs were made by animals which had undergone the operation. In these attempts the acceleration of the heart was limited to a few beats per minute. When adrenalin was given the heart was quickened and the recovery of the ability to run for long distances was impressive. It was, nevertheless, incomplete. Denervation of the liver was another procedure which seriously lowered the capacity of the dogs to continue exercise. The suggestion is made that a humoral agent released from the liver under the influence of the nervous system may be definitely needed by the muscles. There have been earlier evidences of such a relation between the liver and the heart.

REFERENCES

1 Adrian: "The Basis of Sensation," New York, W. W. Norton & Co., 1928.
2 Adrian and Bronk: Journal of Physiology, 1928, LXVI, 81.
3 Benedict and Parmenter: American Journal of Physiology, 1928, LXXXIV, 675.
4 Shaw: The same, 1928, LXXXV, 158.
5 Parker: The same, 1928, LXXXVII, 93.
6 Copher and Dick: Archives of Surgery, 1928, XVII, 408.
7 Copher, Dick and Koechig: American Journal of Physiology, 1928, LXXXVII, 510.
8 Rask and Howell: The same, 1928, LXXXIV, 363.
9 Campos, Cannon, Lundin, Walker and Walker: The same, 1929, LXXXVII, 680.

POST GRADUATE COURSE IN EAR, NOSE AND THROAT AFFECTIONS

We have received the announcement that Ear, Nose and Throat Post Graduate Course will be given at the University of Bordeaux, France, commencing July 22, 1929. This course will consist of Surgery of the Ear, Nose and Throat, Trans-maxillary and Plastic Surgery, Bronchoscopy. Leon Felderman, M.D. of Philadelphia, is representing this course.

Case Records
of the
Massachusetts General Hospital

ANTE-MORTEM AND POST-MORTEM RECORDS AS USED IN WEEKLY CLINICO-PATHOLOGICAL EXERCISES

EDITED BY R. C. CABOT, M.D.

F. M. PAINTER, A.B., ASSISTANT EDITOR

CASE 15091

HOARSENESS AND PAIN IN THE RIGHT SHOULDER

MEDICAL DEPARTMENT

An American fifty-five years old entered July 31 complaining of shortness of breath and hoarseness.

He was in good health for many years until two years before admission. Then he had a feeling of mild lassitude and malaise. He had slight pain back of the right ear. He stopped work and since that time had done only light odd jobs. The December before admission he noticed hoarseness. This had grown worse. In May his breathing began to be wheezy. A diagnosis of asthma was made, which he doubted. He had no cough at any time. His right shoulder began to be a little "rheumatic". For two weeks his sleep had been broken by dyspnea and wheezing; after raising mucus he was able to sleep again. During the day he had a little more sputum than formerly. Ten days before admission he had a bad attack of dyspnea and increased hoarseness. A physician quieted him with hypodermics and gave digitalis for a week.

His family history is not significant.

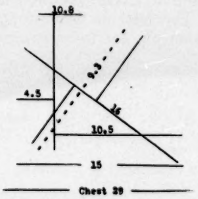
At twenty-two he had gonorrhea. He had had repeated exposures to venereal disease, but denied symptoms of syphilis. (The reliability of this statement was questioned.) He had taken no alcohol for seven years. He had gone to sea most of his life, working in factories and shipbuilding yards in the intervals. He had malaria off and on for ten years beginning when he was twenty-three. In his youth he had several attacks of sore throat. His left arm was amputated below the elbow in a machine. During the past few years he had had some abscessed teeth. He had had a few sharp momentary pains in the region of the heart, scarcely noticeable. He had had some palpitation, principally on emotion. Ten years before admission he weighed 216 pounds, his best weight. He now weighed 160. He had lost 25 pounds in the last two months.

Clinical examination showed a well nourished man with constant hacking, brassy cough, gurgling as though trying to raise some secretion. There was slight obstruction to the breathing. The lips were cyanotic. There were capped teeth, bridge work and moderate pyorrhea. The tonsillar region was somewhat reddened. The trachea was pushed to the left. Beneath the sternoclavicular and palpable in the median part of the supraclavicular fossa and the suprasternal fossa was a pulsating expansile tumor over which the heart sounds were audible. No murmurs. There was a movement of the trachea and of the head with each heart beat. The point of maximum intensity of the heart reclining was 10.5 centimeters from midsternum in the fifth interspace 2 centimeters outside the midclavicular line, sitting up 9.5 centimeters; right border 2.5 centimeters, supracardiac dullness 7 centimeters. Aortic second sound muffled, equal to pulmonic second. Throughout the entire precordium was a loud high pitched systolic murmur. Over the aortic area an early short diastolic was transmitted down the left border to the apex, loudest along the left border. Right temporal pulse greater than left and right temporal artery more prominent than left. Right radial pulse of the Corrigan type. Blood pressure, right 160/50, left 198/58. No marked peripheral sclerosis. Chest thickened in the anteroposterior diameter. Flaring costal margins. Expansion very slight. Breathing very coarse throughout the lungs. The inspiratory phase at times sounded like coarse râles, probably because of obstruction to breathing. Liver edge palpable (two finger-breadths?) below the costal margin. Relaxation of the right external abdominal ring and considerable impulse on coughing. Abduction of the right shoulder limited and painful in extreme degrees of motion.

Urine not remarkable. Before operation blood normal. Hinton and Wassermann strongly positive. Non-protein nitrogen 41 milligrams.

Before operation chart normal except for rapid pulse at admission.

X-ray showed the heart shadow slightly increased in size downward and to the right in the region of the ventricle. (See diagram.)



There was marked increase in the supracardiac shadow, apparently due to tortuosity and dilatation of the aorta. Above the aorta in the region of the innominate there was a dense shadow with sharply defined margins which extended to the right of the midline for a distance for about 3 centimeters. This shadow was continuous with the shadow of the spine and dis-

appeared in the dense shadows of the neck. The trachea was displaced toward the left. In the oblique view the mass could be separated from the spinal shadow. There was no visible pulsation in the mass. The lung fields were clear. The diaphragm was in the usual position on both sides and moved normally with respiration. The spine showed rather extensive proliferative changes.

A heart consultant advised operation. A surgeon doubted its value but asked time for further consideration. Another heart consultant "agreed with the opinions expressed."

August 17 operation was done. The patient did well after it, though he was quite hoarse. August 22 a second operation was done. Again he did well. He had a good deal of difficulty in breathing and had to sit upright. Potassium iodide seemed to give some relief. August 25 his temperature rose to 104.8°. The potassium iodide was omitted. A throat consultant reported, "The cords move freely although perhaps a trifle sluggishly. The left arytenoid is slightly infiltrated; no edema. Mucosecretion plentiful. Pyriform sinuses well filled with the same. Impression: no laryngeal obstruction." The leukocyte count was 25,600. Two days later the patient was very uncomfortable, with incessant coughing, and sleeping only for short periods in spite of a quarter grain of morphia every three hours. The temperature ranged from 100.1° to 103°. X-ray showed the right lung less radiant than the left and the outline of the diaphragm a little hazy on that side. The density was most marked along the axillary margin. There was no appreciable change in the midshadow.

August 31 the pulse rose to 150 and the patient died.

Discussion

BY RICHARD C. CABOT, M.D.

NOTES ON THE HISTORY

1. Suspicions do not necessarily mean anything, but one cannot prevent them from arising in one's mind with the combination of things we have in this history. We have a chronic hoarseness in a middle aged man and pain in the shoulder. Both of these often link up with aneurysm. Shortness of breath goes with that diagnosis perfectly well too. Asthma is often the diagnosis made on cases turning out to be aneurysm.

The combination of dyspnea and hoarseness is not common.

NOTES ON THE PHYSICAL EXAMINATION

2. The use of the term "brassy cough" shows that the interne has already made the diagnosis of aneurysm. Of course "brassy cough" does not sound in the least like brass. You may hit brass with any substance you like and it will not sound like "brassy cough." It is a very hard ringing cough without sputum, unproductive, not peculiar to any one condition, but often seen with aneurysm or tumors giving pressure on the trachea or bronchi. I do not think the word "brassy" should be used in a record. It states your diagnosis too early I think, like "rose spots" in suspected typhoid.

3. I do not know what "slight obstruction to the breathing" means in a physical examination;—"obstruction to breathing" is stating the conclusion rather than the evidence.

4. "The trachea was pushed to the left." He must have seen the Adam's apple or perhaps he could see the whole thyroid and see that it was pushed to the left. Presumably he did not use X-ray.

5. "Pulsating tumor." That does not prove aneurysm. You can have a pulsating tumor in that region which may be a misplaced artery, (especially with cervical rib) which then often gives rise to the false suspicion of aneurysm. A soft neoplasm may also pulsate or may be jogged rhythmically by a normal artery behind it.

6. The right radial pulse is mentioned; I should like to hear about the other.

7. There is a difference of thirty points in the blood pressure on the two sides; that ought to mean a real difference. If it were ten points it would mean nothing. But a difference of thirty points anybody ought to be able to distinguish from variations due to technique. That large pulse pressure ought to correspond with the jump and kick of the Corrigan pulse that has been mentioned. There is more pulse pressure on the whole on the left.

8. Going back to the description of the pulsating tumor, I do not see that it is perfectly clear which side it is on. The pulse pressure is greater on the left, and the trachea is pushed to the right.

Miss Painter. The record does not give the side, but the X-rays show it.

Dr. Cabot: The X-ray shows on the left an apparently dilated aortic knob; but the striking thing is off to the right, a shadow which is more certainly abnormal than the knob is. Notice the difference between the supracardiac measurement by X-ray (10.8 cm.) and the one by percussion, which was only 7. I am assuming, then, that this tumor is on the right side and was the same which they felt as a pulsating mass; naturally then it is the right shoulder that is in trouble.

9. We are looking of course for an examination of the vocal cords to see if he has a paralysis of the left recurrent laryngeal.

10. "No visible pulsation in the mass seen by fluoroscope." That of course would be against aneurysm unless it is filled up with thick clot, as it often is. Absence of pulsation does not in any way rule out aneurysm.

11. The heart consultant had courage to advise operation. He may have had first rate rea-

sons which we do not know. The question is as to what operation they are going to do. There is no question about the diagnosis of aneurysm. They would not be going after a tumor in that region. It was aneurysm. Perhaps they are going to try to wire it or to tie something. If they are going to tie something, what will it be? I cannot say what the operation was unless they tried to wire. As you know, there have been successful wiring operations for aneurysm.

12. There is no paralysis of the left recurrent laryngeal.

13. Aneurysm could not possibly cause a leukocytosis of 25,600. Something else must have done it, perhaps the same thing that caused the temperature.

14. In the X-ray there is a very marked difference between the amount of light coming through this right side and the opaque shadows on the other. It looks like a confluent bronchopneumonia on the right.

DIFFERENTIAL DIAGNOSIS

The suspicions which were naturally aroused in the beginning seem to be confirmed by everything that has come out since. I have no question as to the diagnosis. The only things to discuss are the complications and details. He has (a) aneurysm of the aorta which is probably caused by syphilitic aortitis, which has affected the aortic valve so that there is (b) aortic regurgitation. That probably is not very great, because the left ventricle does not seem to be very large. Exactly what portion does this aneurysm involve? Probably the arch and very likely the right innominate. I think it certainly displaced the trachea, from the X-ray evidence that has been presented. It must press on some nerve in such a way as to give that pain in the shoulder. Shoulder pain is always a good thing to be suspicious about where there is a possibility of aneurysm. I remember a great many cases here and in the Out-Patient Department treated for a period for rheumatism in the shoulder which later turned out to be aneurysm.

I have said all I can about the operations. I do not know what they did unless they wired.

PRE-OPERATIVE DIAGNOSIS AUGUST 17

Aneurysm of the innominate artery.

FIRST OPERATION

Under local novocain the common carotid artery was dissected up and an aluminum band was clamped around it, obliterating the lumen by about three-quarters of an inch of its normal diameter.

PRE-OPERATIVE DIAGNOSIS AUGUST 30

Aneurysm of the common innominate artery.

SECOND OPERATION

Under local novocain the band was removed and the common carotid artery was firmly ligated with two sutures of Number 2 continuous catgut.

FURTHER DISCUSSION

The next event obviously is pneumonia, whether from or merely after the operation you can judge as well as I. This was a case in which one certainly would have a better chance of catching pneumonia than with most operations. On the other hand it is the sort of case in which one would take any chance to prolong life and relieve suffering, even if death might follow failure. As it is life is not worth living.

Diagnosis: Syphilitic aortitis, aneurysm of the aorta, aortic regurgitation, presumably some hypertrophy of the heart because of the aortic regurgitation (aneurysm itself does not enlarge the heart) pressure on and displacement of the trachea, pneumonia, I suppose bronchopneumonia, of the right lung.

A STUDENT: Was the carotid artery involved?

DR. CABOT: I think that the aneurysm involved the innominate, but it might perfectly well have involved the common carotid.

A STUDENT: How do you explain the fact that the right temporal pulse was stronger than the left? Could it be pressure on the left carotid by the aneurysm, giving a smaller temporal pulse?

DR. CABOT: No. I think that is too far off. I cannot answer your question. There is always the possibility of error in recording. Right and left are often recorded wrong.

A STUDENT: The pulse pressure is greater on the left, is it not?

DR. CABOT: Yes, it is greater.

A STUDENT: Would an aneurysm on the right decrease the pulse pressure?

DR. CABOT: Yes, if it is big enough, making a reservoir through which the blood ran less fiercely on that side.

A STUDENT: Maybe that was normal.

DR. CABOT: It is a pretty big pulse pressure for normal. He has aortic regurgitation, from the big pulse pressure, and also it is cut down somewhat by the aneurysm on the right.

A STUDENT: Is 198 high blood pressure or is it merely the result of regurgitation?

DR. CABOT: Both. I do not see how you can help saying that it is a high blood pressure, but I have no doubt that it is a result of the regurgitation.

A STUDENT: You do not think it was due to hypertension?

DR. CABOT: No. There is no evidence of that.

A STUDENT: Could it involve only the innominate artery and not the carotid? That would account for the difference in pulse pressure on two sides.

DR. CABOT: I should think it would produce that difference whether the carotid were involved or not—anything that involves the innominate with or without the carotid would do it.

A STUDENT: Does this condition usually result in such a loss of weight?

DR. CABOT: Yes I looked that up a good many years ago and found that aneurysm does usually cause loss of weight. I think the reason is the pain and cough, which result in making people lose a great deal of sleep. If you ever look at yourself in the morning after having pain at night, you will see that you look thin. If you weigh yourself you will see that you have lost during the night. Loss of sleep causes loss of weight. Here is a story of chronic loss of sleep. Whether that is the explanation of it or not I do not know. But the fact of emaciation in aneurysm is well authenticated. In making the diagnosis between tumor and aneurysm it should be brought out that loss of weight does not favor tumor, because aneurysm causes just as much loss of weight.

X-RAY INTERPRETATION AUGUST 1

The findings are probably due to aneurysm of the innominate artery with dilatation of the aorta and hypertrophy of the left ventricle. There is also some evidence of arteriosclerosis and hypertrophic arthritis.

X-RAY INTERPRETATION AUGUST 30

This may represent a beginning pneumonia.

CLINICAL DIAGNOSIS (FROM HOSPITAL RECORD)

Aneurysm of innominate artery.
Tertiary syphilis.

DR. RICHARD C. CABOT'S DIAGNOSIS

Syphilitic aortitis.
Aneurysm of the aorta and probably of the right innominate artery.
Aortic regurgitation.
Probably hypertrophy of the heart.
Pressure and displacement of the trachea.
Terminal bronchopneumonia of the right lung.

ANATOMIC DIAGNOSES

1. *Primary disease.*

Syphilitic aortitis.
Aneurysm of the innominate artery.

2. *Secondary or terminal lesions.*

Hypertrophy of the heart.
Bronchopneumonia.
Arteriosclerosis.
Operation wound—ligation of carotid artery.

DR. TRACY B. MALLORY: Here are the heart and aorta from this case. The heart is hypertrophied. It has never been weighed because we did not wish to separate it from the aorta, but the increased thickness of the left ventricle is obvious. It is not however so elongated as we commonly see with a marked aortic regurgitation. The valves show only a trace of regurgitation. The major portion of the aneurysm is external to the aorta, in the innominate artery, which is practically filled with a pretty well organized blood clot. The arch of the aorta is involved and is dilated to about two and one half times its normal diameter. There is typical scarring of luetic aortitis and also very marked ordinary arteriosclerosis.

The other findings of interest in the case were bronchopneumonia, a fairly considerable degree of arteriolar sclerosis in the kidneys, suggesting but not proving that he may have had some hypertensive element, and also rather numerous papillary adenomata in the kidneys, varying from a millimeter to a centimeter in size. They are the commonest tumors in the kidney, and of no significance except perhaps that some renal carcinomas may develop from them.

DR. CABOT: You would not go so far as to call that nephritis?

DR. MALLORY: No.

DR. CABOT: It was lucky for us that we did not suspect the urine. They said it was not remarkable. We hate to go so far astray.

A STUDENT: What is the differential diagnosis between aneurysm and tumor where there is no pulsation in X-ray?

DR. CABOT: In the first place in aneurysm there is usually some evidence of syphilis, not merely the Wassermann, which is some evidence, but aortic regurgitation, which taken with the Wassermann is pretty good evidence of syphilitic aortitis. (We can have both syphilitic aortitis and tumor, but statistics show that we do not often have both at the same time.) First then there is some definite evidence of syphilis, then the presence and position of a tumor in the X-ray, the presence or absence of any evidence of tumor anywhere else. I suppose it is perfectly possible to have a mediastinal tumor in the region where this aneurysm was, but it is certainly unusual, especially in the absence of any glandular enlargement in that region or anywhere else.

A STUDENT: What about substernal thyroid?

DR. CABOT: I do not know of any case where it was off to one side as in this case. I have never known so much displacement of the trachea by a substernal thyroid or by any other tumor except where there were a good many other evidences of tumor, such as edema of the arms, cyanosis, dilated veins, enlarged glands and so on.

A STUDENT: Do you often have an aneurysm of the carotid without the aorta being involved?

DR. MALLORY: I am sure that is possible. Clinically the tumor in the neck was the presenting feature, rather more so than is brought out in the record; and the operation was directly intended to be one upon an aneurysm of the carotid rather than one on the aorta.

A STUDENT: Were there any evidences of emphysema?

DR. MALLORY: No.
A STUDENT: Was the sternum eroded?
DR. MALLORY: Yes, very much eroded.

CASE 15092

CYSTITIS AND HEMATURIA

UROLOGICAL DEPARTMENT

A French-Canadian factory operative fifty-seven years old entered July 23 complaining of burning micturition.

He was perfectly well when slight burning began, fourteen weeks before admission. For the past five weeks it had been very severe, and he had urinated seven to eight times a day and four to five times at night. During the past three weeks his urine had been bloody several times. Since the onset his weight had fallen from 157 to 143 pounds. Five years before admission he had a little frequency and urination at night. He took some "kidney" pills and was free from symptoms referable to the urinary tract until the present illness except for urination once or twice at night.

The family history is not significant. His second wife had never been pregnant in fourteen years of marriage.

He had smallpox at four years of age, typhoid fever at seventeen, gonorrhea at twenty-five. He had never had chancre, but had had some kind of itching rash which lasted off and on for two years.

Clinical examination showed a somewhat emaciated, slightly pale, pock-marked man in no discomfort. Lungs normal. Heart not enlarged. Sounds of poor quality. No murmurs. Blood pressure 120/70 to 140/63. Abdomen negative. Liver edge just palpable below the costal margin. Genitals normal. Rectal examination showed the prostate moderately large but not remarkably so for his age. It seemed harder than was normal. There were moderate external hemorrhoids. Pupils equal, regular, reacted sluggishly to light and distance. Knee-jerks normal. No clonus, Romberg or Babinski.

Before operation urine 120 to 63 ounces, specific gravity 1.028, a very faint trace to a very slight trace of albumin at both of two examinations, 5 to 10 leukocytes and 10 to 15 epithelial cells at one, numbers of red cells at the other, mucus at both. Renal function: appearance time three minutes, in two hours 65 per cent. Blood not recorded. Hinton and Wassermann both strongly positive. Non-protein nitrogen 25 milligrams.

Cystoscopy was done July 24 and operation July 26. August 2, when the stitches and wicks were removed, there was considerable inflammation about the wicks and much thin purulent material from the depths of the wound. The urine was quite clear. The wound healed well after this.

A lumbar puncture done on September 4 showed 9 cells, colloidal gold 1112210000. Otherwise the findings were normal.

September 6 the patient was discharged.

DISCUSSION

BY GEORGE GILBERT SMITH, M.D.

This is the history of a man of fifty-seven whose chief complaint was of burning micturition. He first noticed this symptom fourteen weeks before admission and it had been severe for only five weeks. In the past three weeks he had noticed hematuria and he had lost about fourteen pounds. The past history contributes nothing to our knowledge of the present illness. The presenting symptoms of frequency and hematuria may be due to a number of conditions; in fact to any condition which is accompanied by infection of the bladder. Tuberculosis, stone, prostatitis, retention from prostate or stricture and tumor are the possibilities which occur. Retention from any cause whatever could be ruled out because he had no residuum. It would be impossible to arrive at a diagnosis from consideration of the history alone.

Routine physical examination did very little to clear up the question. His urine showed pus and red blood cells. His Hinton and Wassermann tests were both strongly positive, but from the fact that he had no residual urine it was evident that a tabetic retention was not the cause of his trouble. His renal function as determined by phthalein test and non-protein nitrogen was normal. Rectal examination showed a moderately large prostate, but not hard enough to indicate carcinoma.

The most important measure in diagnosis was the cystoscopy. A solid sloughing tumor, apparently pedunculated, was found rising from the right lateral wall of the bladder.

PRELIMINARY DIAGNOSIS

Carcinoma of the bladder.

CYSTOSCOPY

Much slough washed out, after which a good view was obtained. Arising from the right lateral wall of the bladder, close to the prostate, was a solid round sloughing tumor, apparently pedunculated. The tumor filled the right half of the bladder. The rest of the bladder was free from growth. The left ureter was seen, and the operator thought also the right. The prostate was not enlarged. Rectal examination showed no induration of the bladder base. Prostate soft. The tumor could be felt as indefinite resistance in the right side of the bladder.

FURTHER DISCUSSION

The real difficulty in such a case as this lies in the selection of a method which will offer the patient the best chance for cure and at the same

time will not subject him to an operation so severe that his chances of surviving are very slight. The three methods which one may employ in such a case are (1) resection, (2) destruction of the growth by electrocoagulation, (3) the implantation of radium in the growth. Of these three methods resection is unquestionably the most hopeful providing it can be done without too great a reaction and provided that the growth has not extended through the bladder wall. Diffuse superficial growths, particularly if situated on the trigone or about the bladder orifice, are best treated by electrocoagulation. Solid growths deep in the bladder wall which are not suitable for resection are the ones in which the use of radium is most satisfactory. In my experience the use of radium in tumors about the trigone and bladder orifice is fraught with great danger to the patient, for frequently death will occur several weeks after operation from pyelonephritis apparently caused by the swelling of the ureteral orifice and probably by the extension of infection from the sloughing trigone upward along the ureters to the kidneys. Electrocoagulation of bladder tumors causes a slough which clears up usually within a few weeks and which does not seem to be accompanied by the severe infections which accompany the slough that follows radiation. I am aware that the employment of gold seeds of radon is supposed not to be productive of slough, but in every case in which I have used these in the bladder there has been a slough which has persisted for months. This causes severe disturbance of the bladder function, and although the patient might be willing to put up with this for the sake of obtaining a cure, the certainty of the cure is often too slight to warrant causing so much suffering.

Operation was done in this case under spinal anesthesia. The findings at operation were substantially the same as shown by the cystoscope.

PRE-OPERATIVE DIAGNOSIS

Tumor of the bladder.

OPERATION

Spinal novocain. The bladder was opened suprapubically. On the right lateral wall well above the ureter was a slightly elevated growth about five centimeters in diameter. It did not appear to have gone through the bladder wall. The entire right lateral wall was removed and the superior wall sutured down to the anterior wall. The ureter was proved to be clear. A rubber tube was left in the bladder. Cigarette wick to the right paravesical space.

PATHOLOGICAL REPORT

A solid tumor the size of a billiard ball, measuring 5 x 6.5 centimeters, with a wide margin of thickened bladder wall attached.

Microscopic examination shows a structure of solid strands of atypical epithelial cells which differentiate to cornified epithelium with pearl formation and invade the muscular wall. The histologic appearances suggest a growth of a low grade of malignancy.

Squamous cell carcinoma.

FURTHER DISCUSSION

In this particular case the entire right lateral wall of the bladder could be removed without interfering with the right ureter. The growth, although it invaded the bladder wall, apparently had not extended through it. The pathologist's examination showed a squamous cell carcinoma of a low grade of malignancy. After the resection of the right lateral wall the edges of the bladder incision were sutured so that the integrity of the mucous membranes was restored.

The bladder was drained suprapubically for ten days or two weeks and then an indwelling urethral catheter was left in until the suprapubic incision closed. The patient was discharged six weeks after operation.

Three months after discharge he reported for observation. Bimanual examination showed no thickening in the region of the bladder. Cystoscopy showed a zone of superficial necrosis around the bladder neck, but no evidence of tumor. This patient was asked to return in another four months, and will be cystoscoped at intervals, so that recurrences, if there are any, may be treated by intravesical methods before they attain any size.

DIAGNOSIS

Squamous cell carcinoma of the bladder.
Syphilis.

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PUBLICATION COMMITTEE

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OPPOSITION TO THE CULTS

DR. RAY LYMAN WILBUR is reported in the daily press to have said that the opposition of the regular medical profession to the cults had created a strong public sympathy for them. As a statement of fact this is in a measure true. Opposition to a cult based upon selfish grounds should properly arouse public sympathy. Regulation of the practice of any profession or trade can be justified solely on the ground that it is in the public interest. In the final analysis all other reasons which may appear important to the individual depend upon the one basis of public benefit. For these reasons whatever sympathy for the cults may have been aroused by the efforts of the medical profession is due to the belief that self interest was the basis for opposition and to the failure of the profession to keep clearly in view the one factor of the public interest and safety.

All cults grow up about a particular method of practice. Along with the development of the method there must be a more or less plausible explanation. This must be simple enough to be understood by the public but sufficiently complex to appear to be the solution of problems hitherto unsolved. Unfortunately the failure of the explanation to meet the requirements of the scientifically trained mind of the physician is perfectly naturally the outstanding fact. His wrath is aroused because the public is taken in by what he regards as buncombe. He is apt to lose sight of the fact that the novelty of the methods of treatment offers the chief popular appeal. If these are analyzed they are found to rest upon well known but perhaps neglected truths. Thus it is natural that opposition arises to the cult as such. This opposition may create sympathy. If opposition to the cult was confined to the lack of adequate training for practice less sympathy would be aroused for its followers. There is no objection which the law can properly interpose to a particular method of treatment. But the law may very properly forbid any one to practice the healing art until he has acquired a sufficient fundamental knowledge to justify his undertaking to treat the sick by any method whatever. Nobody is allowed to practice medicine until he has demonstrated this knowledge. Much that is required is seldom used by the narrow specialist but it is properly required because a specialist worthy of the name must have a wide basic knowledge. The opthalmologist must deal constantly with cancer, tuberculosis, and the degenerative diseases of heart and kidney. The dermatologist is constantly confronted with problems of metabolism and nutrition. Identical objections would hold against those who would treat sickness only by fitting glasses or using ointments as against those who would confine their efforts to certain manual or mechanical manipulations. In a great many instances these methods may be the best possible treatment. The public interest however demands that this decision must rest upon a judgment trained by sound basic knowledge and not limited to training in the technique of one method of treatment.

There is no legitimate objection to treatment by manipulation. There is very great objection to the application of this method by one who has no knowledge that he may be manipulating incipient cancer. It is plainly the duty of the medical profession to inform the public of the dangers involved in the inadequate training of those who would treat the sick by any method whatever. This does not involve opposition to any particular method of treatment.

In Massachusetts the single standard of fitness based on demonstrated knowledge of the fundamentals has been in force and has worked well for many years. The osteopaths who at first desired a special board of examiners are now strong advocates of the single standard. So far three chiropractors have demonstrated their fitness and are registered. Any sympathy which has been aroused for those excluded from practice of the healing art is based upon a misunderstanding of the purposes of those anxious to uphold reasonable standards. There is no rea-

son why the follower of any cult who has failed to meet the requirements fixed by the Legislature should be granted special privileges. The same is true of any medical student not adequately trained.

If at any time or in any place opposition has been expressed against any particular method of treatment a reaction of sympathy for those who would adopt the method is inevitable. In this sense the isolated remarks of Dr. Wilbur quoted by the press are true. But they should not be interpreted as indicating that it is unwise or useless to combat the attempts of any group or sect or cult to secure special privileges for those inadequately trained to practice the healing art. The Massachusetts Medical Society objects to special privileges to those inadequately trained. It asks that all who can show their fitness to meet the requirements laid down by the Legislature have a fair and equal chance.

FIRE DRILL IN HOSPITALS

Recently a Boston daily newspaper contained a description of the fire drill in a suburban hospital. The statement that it was the first fire drill ever held in a hospital, might be characterized by the word "exaggerated", used by Mark Twain in referring to the reports concerning his death; but the event was of sufficient significance to deserve notice.

In reviewing the accounts of accidents, which have occurred in spite of numerous mechanical devices to prevent them, one is often confronted with the fact that the human element has failed. It is always a factor of uncertain strength. At the critical time, will the human individual do the right thing?

The idea of the fire drill in the hospital is to reduce the probability of failure of the human element. In properly constructed hospitals, nowadays, the danger of a patient's burning to death is not great. But what is the use of smoke doors, if a panic prevents thinking about the obvious thing to be done?

In a suburban hospital of semi-fire-proof construction, with a sprinkler system and plenty of fire extinguishers, a short circuit in the elevator shaft, near the roof, caused a good deal of smoke of the penetrating, pungent, acrid character associated with burning rubber. It was known that somewhere in the hospital was a switch to turn off the electricity to the elevator, but no one except the engineer, who was out of the hospital for a few hours that night, knew where the switch was situated. The danger was inconsiderable, and the actual harm done slight, but this little incident made a distinctly bad impression.

The fire drill, which should be performed under the supervision of the Fire Department of the town or municipality, should give to every person employed in the hospital, familiarity with his or her duties, in case of fire. It should serve as an additional check on the mechanical side of dealing with the fire situation in the hospital.

It would do much to prevent impairment of morale, when the emergency comes, if every individual in the employ of the hospital, from superintendent to scullion, had assigned duties, with printed directions posted at certain strategic points in the hospital as to certain fundamental procedures.

Conferences among hospital superintendents are of great assistance, in disseminating information. In the newspaper report of the drill to which reference has been made, it was stated that every mattress in that hospital has handles at each side (loops of ticking) so that mattress and patient can be picked up and moved easily. This is a useful suggestion.

Inquiry has shown that fire drill is not a part of the routine of every hospital. It should be, and members of the medical profession can promote the peace of mind of their patients when in hospitals, and add to their safety, if they exert their influence in having provision made for such drill at the hospitals in which they are interested.

ALCOHOL AND THE PUBLIC HEALTH

Of late the newspapers have given some space to certain aspects of the analysis of liquor by the State Department of Public Health. Samples of confiscated liquor in large numbers have been examined for state and local police officials in the laboratory of the Division of Food and Drugs of this Department. This work has grown to such proportions that almost half the time of the laboratory staff is given up to it. Since this Division was created and the appropriations are made to supervise the general wholesomeness and safety of the food supply of the Commonwealth it seems to us that this plethora of liquor work is a perversion of function and perhaps even approaches a misappropriation of funds.

Any killing or maiming that the liquor so analyzed may do has already been done and the warning will be made public through court procedures. Thus it is in no sense a preventive medical function to analyze it but has merely to do with law enforcement through the courts. It would be as logical to expect the State Department of Public Safety to conduct a laboratory to examine diphtheria smears as for the Department of Public Health to analyze contraband liquor. Any health department today has enough problems of major importance to the public to cope with, without adding complex matters patently outside its field. By this the Journal in no sense wishes to be understood as belittling the prohibition problem. But let us forbear from further confusing government by an unnecessary confusion of functions.

THE TRIAL OF DR. RICHARD HENRY HOUGHTON

THE testimony given in Court by Dr. Richard Henry Houghton which seemed to have weight with a Jury in awarding a large verdict for damages to a patient upon whom a tonsillectomy was performed under ether anaesthesia has been more or less privately discussed by physicians and after the matter had been passed upon by the courts came up for consideration by the Committee on Ethics and Discipline of the Massachusetts Medical Society of which Dr. Houghton is a member.

Dr. Houghton's testimony before the Court was to the effect that the administration of ether caused ill health of the patient and specifically, in his opinion, was the etiologic factor in the development of bronchitis. Although the bronchitis did not immediately follow the operation and the opinions of Dr. Houghton were combatted by testimony of physicians of standing, the Jury apparently believed Dr. Houghton's opinion to be trustworthy. It was the opinion of physicians in attendance at the trial that Dr. Houghton's attitude as well as his opinions did not reflect a judicial attitude.

The proceedings of the Board of Trial of the Council of the Massachusetts Medical Society were according to Chapter VIII of the By Laws. Dr. David Cheever, Chairman of the Committee on Ethics and Discipline, presented the evidence in the possession of the Committee and the accused was defended by Dr. Francis D. Donoghue.

The Board of Trial found that Dr. Richard Henry Houghton was guilty of conduct unworthy of an honorable physician and voted unanimously to recommend that he be expelled from the Society. This action of the Board of Trial will be referred to the Society and requires confirmation before it becomes effective.

This case is of great interest because of several circumstances. First: treatment by a reputable physician was adjudged responsible for the ill health of a patient. The conclusion reached was the opinion of twelve laymen, later modified by the presiding justice. The accused was tried before a group who, in the language of the law, are his peers. While the belief exists that the jury system by and large is the most reasonable procedure thus far devised for determining the status of an accused person, physicians may rightfully believe that testimony of a technical nature referring to the medical treatment of a case may not be correctly interpreted by the laity. This may, we believe, prevent a logical decision under certain circumstances and if so in this case is most unfortunate. A layman may be excused for feeling that, since the decision of the jury was not wholly endorsed and confirmed by the presiding justice, it would be fair to assume that the defendant was entitled to a new trial. Second: It is unfortunate when a physician called upon to give information to the court submits opinions which are at variance with the general experience and belief of the profession. He thereby places himself in the position of one who discredits the practice of medicine as accepted and adopted by the majority. He must bear the obloquy which his conduct thereby brings upon himself. Third: This case seems to justify the feeling that physicians who are not qualified by experience or temperament to meet the trying ordeal of testifying in a legal contest should refrain from giving expert testimony. Any fair-minded man ought to be aware of the danger to his own reputation and injustice to others if he flounders in direct and cross examinations without adequate intellectual and temperamental equipment.

The profession is confronted with a great burden in the increasing number of malpractice cases and doctors must come to an understanding of the injustice of unsound opinions in court trials. Honorable witnesses should take the witness stand devoid of prejudice with a fixed determination to relate facts and express opinions in the strictest possible adherence to truth.

The attorneys are partisans; the doctor should stand as a representative of a profession which is governed by scientific and moral integrity.

THIS WEEK'S ISSUE

CONTAINS articles by the following named authors:

PATCH, FRANK S. B.A., C.M., M.D. McGill University 1903. F.A.C.S. Clinical Professor of Genito-Urinary Surgery, McGill University. Urologist to Montreal General Hospital and Western Hospital, Montreal. His subject is: "The Association Between Leukoplakia and Squamous-cell Carcinoma in the Upper Urinary Tract." Page 423. Address: 1225 Bishop Street, Montreal, Canada.

BIGELOW, GEORGE H. A.B., M.D. Harvard 1916. Doctor of Public Health 1921, Commissioner of Public Health of Massachusetts. He writes on "Is the State's Cancer Program State Medicine?" Page 438. Address: State House, Boston.

MINER, HAROLD E. M.D. University of Maryland School of Medicine, Baltimore. Medical Director, Massachusetts Public School, Holyoke, 1915-1920. State District Health Officer, Massachusetts Department of Public Health 1920-1929. His address is: 65 Columbus Avenue, Holyoke, Mass. Associated with him is:

FORSBECK, FILIP C. B.S., M.S., M.D. Rush Medical College. Epidemiologist, Massachusetts Department of Health. Address: 546 State House, Boston. Their subject is: "An Outbreak of Typhoid Fever Traced to Chicken Salad Infected by a Carrier." Page 440.

BAZIN, ALFRED T. M.D. McGill University 1894. F.A.C.S. Professor of Surgery, McGill University. Attending Surgeon, Montreal Gen-

eral Hospital. President-Elect, Canadian Medical Association. His subject is: "Varicose Veins." Page 442. Address: Medical Arts Building, Montreal, Canada.

STILES, PERCY G. S.B., Ph.D. Assistant Professor of Physiology, Harvard University. Assistant Editor, *Biological Abstracts*. His subject is: "Recent Progress in Physiology." Page 449. Address: Harvard Medical School, Boston.

THE BOSTON MEDICAL LIBRARY

"CHEMISTRY IN MEDICINE"

THE Chemical Foundation, Inc., is rendering a service to the medical profession when it draws its attention to the rôle which this science has played in solving some of the problems which have perplexed physicians from the time of Hippocrates to date. Chemistry is a science fundamental to medicine because it deals with the transformations of matter, no less in the organic field than in the inorganic. In the direct application of this province of chemistry in the inorganic field, witness the simple chemical reactions which transform iron into steel, for example. The admixture of certain proportions of carbon, silicon, manganese, nickel and chromium with iron have resulted in the production of steel in great variety of utility. In the organic field the chemist has shown that the development of the sea urchin's egg can be promoted without the presence of the male element or sperm. This observation in itself gives a clear indication of what limitless possibilities organic chemistry offers to the student of chemical phenomena. This seems all the more appalling when we consider how little is actually known of the chemistry that goes on in a single cell or even of its individual composition. These cells absorb and secrete and as a result of these processes the oxidation of the sugars, fats and proteids that supply the body with energy of various kinds is promoted. In spite of the comparative ignorance of the functions of the individual cell, workers in the biochemical laboratories have uncovered quite a number of reactions which are very fundamental in the human economy. The physical chemist carries even further the investigations of his co-workers in the organic or bio-chemical field and shows how, in the body, the atoms of glucose, an oxidation product of the action of the cells of the body upon the starches and sugars elaborated within the organism, endows that cell with the properties of an electric unit, capable of generating energy just as the positive and negative plates of an electric battery generate electric energy. Chemists, through their study of the structure of that minute division of matter, the molecule, and the methods of combination of its component atoms, as well as the behaviour of these molecular combinations under varying conditions, are beginning to get a vision of the infinitude of chemical relations which obtain in the body and what kaleidoscopic adjustments and readjustments may be brought about by bringing these multitudinous units into certain relations with one another. It would seem that many of the phenomena of heredity, for example, will doubtless be explained upon a better understanding of these relations.

The biological chemist is busied with the problems growing out of that which has been established thus far in the study of genetics and inasmuch as much of this knowledge is concerned with divisions of matter viz: the genes, which are too minute for microscopical study, we shall have to wait for further progress in our knowledge of how the various genes, which are the carriers of hereditary tracts, affect the various combinations which are capable of accounting for the many curious phenomena of inheritance. It is probable that light will be shed upon these processes through the behavior of these very minute divisions of matter to exposure to x-rays of varying wave lengths and that through such physical methods of investigation the behaviour of these genetic cells may come to be comprehended. So it becomes apparent how significant are modern methods of chemical and physical research in the solution of the problems of normal development. Complicated as these must be they are as nothing compared to what pathological perversions of physical and chemical cells behaviour are likely to become in diseased conditions. To those who are interested to see what has so far been accomplished in this field and glimpse something of the methods being employed in exploring this terra incognito, this series of lectures entitled "Chemistry in Medicine" will be found very suggestive.

THE HEARING ON THE CHIROPRACTIC BILL

THE Committee on State Administration held a hearing on Senate 225, the chiropractic bill, on February 20.

Herbert R. Lotz of Plymouth, a chiropractor, conducted the case for the proponents. He argued that a uniform examination for physicians and chiropractors would be unfair.

Robert M. Thomas, President-Secretary of the Maine Board of Examiners in chiropractic; George H. Nash, a member of the New Hampshire Legislature and chairman of the New Hampshire Board of Chiropractic Examiners; and W. A. Gage, Secretary-Treasurer of the Vermont Board of Examiners in Chiropractic, also spoke in favor of the bill.

George Flynn of Boston, Clarence E. Dean of Athol, former Senator Thomas F. Cassidy of Cheshire and Representative Daniel F. Coakley of Chicopee testified to the benefits they had received from chiropractic treatment. Many letters, some of which were read were also filed with the Committee.

The City of Boston through its legislative agent, former Senator Bilodeau, protested against granting to chiropractors the right to sign death certificates.

Dr. John M. Birnie, President of the Massachusetts Medical Society and Chairman of the Joint Committee on Legislation of this Society and the Homeopathic Society conducted the opposition to the bill. He urged the continuance of the one standard for all, which had worked so well for many years in Massachusetts. He pointed out that the Board of Registration in Medicine existed solely for the protection of the public and that all applicants should pass the same examination in the fundamental subjects which have been specified by the Legislature. The osteopaths all do this and three chiropractors so far have passed the examinations and been registered in Massachusetts.

Dr. Frank M. Vaughan, Secretary of the Board opposed the bill. Dr. George H. Bigelow, Commissioner of Health pointed out the dangers of permitting those to practice who were wholly untrained in the recognition and treatment of communicable diseases. Dr. Allan W. Rowe spoke from the viewpoint of one not a physician of the need of a broad basic training in the medical sciences as a preparation for practicing medicine.

Dr. Charles R. Wakeling, President of the Massachusetts Osteopathic Society urged the continuance of one standard of fitness for all. He pointed out that the osteopaths were glad that they were compelled to meet the same requirements as all physicians and saw no reason why the chiropractors should be granted special privileges.

Dr. William J. Brickley spoke of the importance in medico-legal matters of adequate training of all who might certify to the cause of death.

Mr. Frank Kiernan, representing the Massachusetts Tuberculosis League opposed any measure which would permit those inadequately trained to undertake the treatment of the sick.

Many representatives of medical and health organizations were present to register their opposition but were unable to speak in the limited time. The Public Health League, The Society for Social Hygiene, The Boards of Health, Nursing Associations, those interested in the control of cancer as well as many physicians from Worcester and Plymouth Counties in particular were present to oppose the granting of special privileges to any sect or cult.

MASSACHUSETTS LEGISLATIVE NOTES

THE Massachusetts Legislature has definitely rejected the smoke abatement recommendations of the Department of Public Utilities. This is final for the year.

House 330 a bill to provide for the licensing of hospitals, clinics, dispensaries, convalescent homes and nursing homes by the Department of Public Health has been given leave to withdraw.

MISCELLANY

HEALTH CONDITIONS THROUGHOUT THE WORLD

A report recently submitted to Congress by Surgeon General H. S. Cumming, of the Public Health Service, summarized in an interesting manner the health conditions in foreign countries during the past fiscal year. It is pointed out that on account of the relation of commerce to the public health in connection with the spread of epidemic diseases it is necessary to keep advised as to the prevalence of diseases not only in the United States but in so far as practicable throughout the world.

There was during the year a constant interchange of sanitary information with other nations of the world through the International Office of Public Hygiene of Paris, the Pan American Sanitary Bureau, and the Health Section of the League of Nations. Valuable information was also received by the Public Health Service from American consuls, officers of the Service stationed abroad, and directly from foreign governments.

The necessity for co-öperation among the nations of the world in preventing the spread of diseases dangerous to the public health has been more widely recognized during recent years than formerly. Experience has demonstrated that disease does not regard international boundaries, and the advance in the facilities for rapid transportation increases the danger of the introduction and spread of communicable diseases.

A noteworthy event which occurred during the past year was the ratification by the Senate in March, 1928, of the International Sanitary Convention signed in Paris in June, 1926. This revised the Convention of 1912. The Convention signed at Paris and ratified by the Senate was later promulgated by the President. The revised Convention makes important changes in the requirements for international notification of the presence of quarantinable diseases and imposes upon the Public Health Service as well as provides means by which this country may receive warning of threatened danger of epidemics from other countries.

The past fiscal year was characterized by generally favorable death rates throughout the world. This statement ought, however, to be qualified in two respects. One is that that 1927-28 death rate when more complete records are available will probably be found not to have been lower than the exceptionally low rate for the preceding year. The other qualification is that any generalization as to the mortality rate for the world must be in relative terms, since the rate of mortality varies so widely in different countries. Thus for example, the death rate in India or China or even certain European cities, is several times as high as that in the United States or in most European countries, a fact that in itself constitutes impressive evidence of modern sanitation and public health administration.

Bubonic plague continued to be pandemic but no new foci appeared, India still being the world center

of bubonic plague. The widespread incidence of bubonic plague is evidenced by the fact that cases were reported in a number of foreign countries including French Indo-China, South China Coast, Algeria, Madagascar, Nigeria, Siam, the Argentine Republic, Ecuador, South Africa, Greece, and scattered localities in Russia. The outbreak of plague in the Argentine Republic has aroused apprehension as to its spread through commerce to other countries. The fact that six ships from ports of the Argentine have been found to be infected with plague upon arriving in ports in other countries, indicates that such fears are well founded. In spite of this widespread prevalence, no cases of bubonic plague occurred on the North American continent except two human cases in California where an epidemic focus exists in ground squirrels in that community.

The cholera situation in India which is the principal focus of the disease of the world was much more serious than in any of the previous eight years, with the exception of 1924. Cholera continues to be endemic in several other parts of the world principally in Siam, Cochin-China and China proper.

Yellow fever appeared in West Africa in June, 1928 after several months' absence. Prior to that time a number of cases were reported at various places in Africa. Occasionally cases had occurred from time to time in Brazil but in 1928 an epidemic condition developed in Rio de Janeiro. Yellow fever was also reported in several other ports of Brazil. It has also been reported at several points in the interior of that country.

The typhus fever situation in Europe continues to improve although cases were reported in Poland, Lithuania, and Russia.

Smallpox continues to be unduly prevalent in view of the fact that an efficacious method of prevention is known. The disease is reported from practically every country in the world.—*United States Public Health Service.*

STUDIES ON PHYSICAL DEVELOPMENT

That systematic physical exercise will increase the height, weight, and vital capacity of school boys is shown in a special experiment undertaken by the United States Public Health Service and reported recently in Public Health Bulletin No. 179.

Perhaps the most interesting result was the slight, but significant, gain in height. Growing boys may be expected to show increases in height in the course of a few months. Thus the group who were not given the special exercises and who were requested to take as little exercise as possible gained on the average about two-thirds of an inch. But the "experimental" group gained nearly a whole inch during the four months of the study. Out of 50 boys in the "control" group only 4 gained as much as an inch and a half during the period; out of 68 in the "experimental" group 18 gained that much. While it is recognized that this rate of increase could not be carried on indefinitely it probably would be a considerable factor over a period of time.

In weight, the boys given the exercises showed an average gain of 3.3 pounds, whereas the "control" group showed a gain of 2.0. In the former, 26 children gained five pounds or more; in the latter only five. Vital capacity (the amount of air which can be expelled from the lungs) also showed significantly greater increases in the "experimental" group.

The study was carried on primarily to ascertain whether gymnasium work would have a definite effect on the posture of boys. An improvement in muscular tone seems unquestionable, since a series of strength tests taken before and after the experiments indicated that the boys in the special classes increased more rapidly than other boys of the same ages. However, all measures of posture, including those made on photographs taken before and after the experimental period, indicated no differences in posture, from whatever point of view considered.

The bodily growth of boys and men from three to fifty years of age is shown in considerable detail in the same bulletin (Public Health Bulletin No. 179), based on a study of 2,200 persons on whom detailed physical examinations were made together with front, back, and profile photographs of the body.

The results of each measurement are given in the report, so that an excellent idea is obtainable as to how growth proceeds, its relation to puberty, and the changes during adult life. Special attention is given to the variability of the measurements from person to person at different ages.

The measurements divide themselves into two rather sharply contrasting groups. Weight, vital capacity, and strength begin at very low values and rise with amazing rapidity during adolescence. The other measurements show a moderate increase throughout childhood; they are, in general, linear measurements on the body. All show remarkable increases at the time of puberty.

Certain measurements reach a maximum in early adult life and thereafter decline (strength, vital capacity, chest expansions). Others are still rising more or less at 50 years (chest measurements, abdominal circumference, weight).

Record of tests of strength on one thousand boys and men from fourteen to fifty years of age are also given in this health bulletin. The tests made included: pull (strength of pulling the hands apart, recorded with a dynamometer); push (pressing the hands together); lift (lifting from the floor): hand grip; lung force (height to which a column of mercury can be sent by blowing into a tube); and lung fatigue ("holding one's breath"—length of time the column of mercury can be maintained at 40 millimeters on a single breath).

Outside of the last measurement (which shows little variation with age), we find that all the strength tests rise during adolescence in much the same manner, spurt upward at puberty, reach a maximum about 30 years, and then decline slightly.

At any one age, as height and weight increase, strength increases; but it is of particular interest that for persons of the same weight strength decreases with height. For persons of the same height, strength increases markedly with weight.

All of the tests show great variability from person to person at any one age, especially lung force and lung fatigue, and there was no indication that any of them could be taken as reliable indices of physical condition. —*United States Public Health Service.*

CORRESPONDENCE

ANNUAL REGISTRATION FOR REGISTERED PHYSICIANS

February 18, 1929.

Editor, N. E. JOURNAL OF MEDICINE,

In the editorial section of the NEW ENGLAND JOURNAL OF MEDICINE, date of February 7, 1929, I notice

a communication relative to the bill for the annual registration of physicians. In view of this request, I submit the enclosed statement.

Very truly yours,

DR. FRANK M. VAUGHAN, *Secretary.*

The problem of annual registration is not a new one in Massachusetts. We are all familiar with the motor vehicle registration. Since 1920, the nurses have had annual registration. This last year, ten thousand nurses have renewed their registration with the Board of Registration of Nurses without any friction or special complaint. The Department of Chiropody, which is under the Board of Registration in Medicine, also requires an annual renewal for each registered chiropodist. Last year, after trying eleven years, the dentists have established annual registration for their registrants and the large majority of them are favorable to this measure.

It is not difficult to understand the opposition which the average physician makes toward a new requirement which is likely to be imposed upon him, together with his professional work and various Federal requirements regarding narcotics and the prohibition law, the constant necessity for meeting the various requirements of Health Boards, as well as satisfying the Department of Vital Statistics in regard to births and deaths. A busy practitioner is weary of attempting to keep up with the complication of modern civilization.

The advocates of legislation for annual registration feel that it is hardly more than a parallel with every modern business effort to have an accurate and up-to-date list, properly classified, of the physicians who are legally entitled to practice medicine in the Commonwealth. When a physician becomes registered, his address at that time is, of course, on file with the Board. If he carefully complies with the law in subsequent changes of location, it is probable that the City Clerk reports to the Board of Registration in Medicine his latest address. There is no means, however, of checking the address if a practitioner goes to another State to practice permanently or temporarily. There is no definite assurance that in case of death, the fact is known by the Board, although every effort is made to follow the reports of the Medical Journals in regard to such deaths.

The NEW ENGLAND JOURNAL OF MEDICINE has offered its columns for a discussion of this matter and I am submitting, for the sake of making the discussion specific, a proposed amendment to the General Laws as follows:

"Each physician registered in this Commonwealth, and who is engaged in the practice of his profession in this state, shall annually before May first record with the Board of Registration in Medicine, accompanied by a fee of two dollars, his registration number and professional address on blanks furnished by the Board, together with such other information as may be indicated.

"The Board shall publish annually lists of physicians who have thus recorded their registration for the current year.

"Each registered physician shall conspicuously display his proper renewal certificate issued hereunder in his office at all times."

This amendment has been written with a view to simplicity. While there is apparently no penalty attached to this law, as a matter of fact verbal advice from the office of the Attorney General would indicate that failure to comply with the provisions in this section could be interpreted as a violation of Chapter 112, Section 61, General Laws of Massachusetts, which gives the Board "authority to suspend, revoke, or cancel any certificate of registration, after a hearing, if it appears to the Board that the holder is guilty of any offense against the laws of the Commonwealth relating to the practice of his profession."

It is obvious that there will be certain benefits to be derived by the public and the profession by such an act. There is apparently an increasing number of people who wish to practice medicine without complying with the legal requirements. These people are a menace to society and every possible effort should be made to inform the public of their status. If the police of each city and town could have an accurate list of the physicians who have the legal right to practice, they would be more interested in keeping watch of illegitimate procedures.

The Massachusetts law requires the Board of Registration in Medicine to investigate complaints regarding illegitimate practice and report the same to the proper prosecuting officer. It has been the custom of this Board to refer all such matters to the Department of Public Safety. These violations are, however, just as much business of the local police and in many cases, these matters could be better handled locally. A registered physician who has an annual certificate on display in his office is in a position to educate the public that they should always look for such a renewal certificate when they apply for medical care.

Although the Commonwealth controls its finances by the budget system so that the actual funds obtained from annual registration could not be directly available entirely for the prosecution of illegitimate practitioners, there is no question regarding the attitude of the Department of Administration and Finance towards requests for additional surveillance in medical matters, if there is increased revenue for such purposes.

ARTICLES ACCEPTED BY THE AMERICAN MEDICAL ASSOCIATION COUNCIL ON PHARMACY AND CHEMISTRY

535 North Dearborn Street, Chicago, Ill.

Dr. W. P. Bowers, Managing Editor,
THE NEW ENGLAND JOURNAL OF MEDICINE,
126 Massachusetts Ave.,
Boston, Mass.

Dear Doctor:

In addition to the articles enumerated in our letter of January 26th, the following have been accepted:

E. Bilhuber, Inc.
Lenigallol

Ciba Co., Inc.
Dial—Ciba
Tablets Dial—Ciba, 0.1 Gm. (1½ grains)
Elixir Dial—Ciba

Yours truly,

W. A. PUCKNER, *Secretary,*
Council on Pharmacy and Chemistry.

A CLINICO-PATHOLOGICAL CONFERENCE AT THE BETH ISRAEL HOSPITAL

Editor, NEW ENGLAND JOURNAL OF MEDICINE,

Beginning Saturday, March 9, 1929, and the first Saturday of every month thereafter, there will be a clinical-pathological conference in the auditorium of the Beth Israel Hospital, from eleven to one o'clock. At these conferences, all post-mortem examinations for the preceding month will be taken up. The clinical history and all the investigative findings will be reviewed by the respective services on which the patient was in the hospital. The ante-mortem diagnoses will be discussed on the basis of such findings and the post-mortem findings will be given by Dr. Schlessinger with a demonstration of the postmortem material.

Doctors and medical students are cordially invited to attend these conferences.

Very truly yours,

HARRY LINENTHAL, M.D.

RECENT DEATHS

NICHOLS—CHARLES L., aged 79, president of the American Antiquarian Society, died at his home in Worcester, February 19, 1929. He was born in Worcester in 1851, and was graduated from Brown University in 1872 and from Harvard Medical College in 1875.

He was a member of the Massachusetts Historical Society and of the Colonial Society of Massachusetts. Dr. Nichols was married twice and he is survived by four children, Mrs. George A. Gaskill, Charles L., Jr., Harriet B. and Brayton Nichols.

WILDER—DR. RAYMOND SARGENT WILDER, a Fellow of the Massachusetts Medical Society from 1892 to 1915, died at his home in New York City, February 20, 1929, at the age of 62.

Dr. Wilder, a native of Cambridge, prepared for Harvard at the Cambridge High School. He received his A.B. degree from Harvard in 1889, and his medical degree four years later. He practiced at Worcester and Cambridge, and later took a course in medical jurisprudence at the University of Pennsylvania. His widow and a stepson, Henry Bradlee Caldwell, survive.

ADAMS—EVA ARGENE, formerly a member of the Massachusetts Medical Society, died at the Eye and Ear Infirmary at Portland, Maine, Friday night, January 25.

WELCH—DR. EDWARD JOHN WELCH, a Fellow of the Massachusetts Medical Society, died at his home in Lowell, February 19, 1929.

He was born in Lowell, July 28, 1863, took an A.B. at Holy Cross College in 1887 and an M.D. at Harvard Medical School three years later. He settled in Lowell and was visiting physician to St. John's Hospital. Dr. Welch was a bibliophile and a few years ago presented his large library of first editions to Holy Cross.

McCARTHY—DR. CHARLES DANIEL MCCARTHY, son of former Mayor Dr. Charles D. McCarthy of Malden, died in the that city, February 18, 1929, at the age of 37.

Dr. McCarthy was born in Malden, attended Canisius College at Buffalo, N. Y., was graduated from Tufts College Medical School in 1915, and completed his education in France and Germany. During the war he served with the American Ambulance Corps and he was decorated with the Legion of Honor. He was a member of the Knights of Columbus and the Elks, a Fellow of the Massachusetts Medical Society and of the American Medical Association. His widow, Mrs. Mary (Gallivan) McCarthy, and a sister, Mrs. R. O. Lee of Newton, survive.

NEWS ITEMS

NEW ENGLAND HAS COMPARATIVELY FEW DRUG ADDICTS—Conrad O. Bradshaw, Federal Narcotic Agent in New England, reports that this section of the country has fewer drug addicts in proportion to population than any other. He believes that the number of addicts is steadily decreasing.

There are supposed to be 100,000 drug addicts in the United States but there are less than 2000 in New England, about half being in Massachusetts with 500 or more in greater Boston.

DR. WILINSKY ADDRESSES THE LUZERNE COUNTY MEDICAL SOCIETY—Dr. Wilinsky, Director of the Beth Israel Hospital, addressed the members of the Luzerne County Medical Society of Pennsylvania in Wilkes-Barre on Wednesday evening, February 20. The subject of his address was "The Relation of the Physician to Community Health Organization."

PHYSICIANS AND CULTISTS IN A BITTER CONTEST IN NEW YORK STATE—Following an announcement by Dr. Stetten, President of the Medical Society of the County of New York, that the Society intends to suppress the practice of medicine by chiropractors and certain others, the President of the American Bureau of Chiropractic, William H. Werner has declared war on the "Medical Trust."

Mr. Werner is reported to have applied all the stock invections coined by the culturists in their attack on practitioners of medicine holding degrees of M.D.

It will be interesting to follow this controversy which unfortunately is not confined to New York.

DONATIONS TO THE CANCER COMMISSION—The Cancer Commission of Harvard University and the Collis P. Huntington Memorial Hospital has received gifts amounting to $34,420.

THE VACCINATION BILL—The Vaccination Bill has been passed by the Senate. The devoted and unselfish efforts of Dr. Samuel B. Woodward for the last twelve years have been successful.

NOTICES

SEVENTH NEW ENGLAND HEALTH INSTITUTE

HARTFORD, CONNECTICUT—APRIL 22-26, 1929

This School of Public Health originally held in Hartford in 1922 will again be sponsored by the Connecticut State Department of Health, having

been successively held in Massachusetts, Maine, New Hampshire, Rhode Island and Vermont.

The Institute is carried on under the direction of the United States Public Health Service, Department of Public Health of Yale University, School of Public Health of Harvard University, Department of Biology and Public Health of Massachusetts Institue of Technology, New England Conference on Tuberculosis, Maine State Department of Health, Massachusetts Department of Public Health, New Hampshire State Board of Health, Rhode Island State Board of Health, Vermont State Board of Health and Connecticut State Department of Health.

The preliminary program is now in preparation and will be ready for distribution in March. A notable list of experts from various fields of public health will form the Faculty of the Institute. Public health workers of New England will find it to their distinct advantage to spend the week of April 22nd in Hartford attending these lectures which begin Monday and extend through Friday afternoon.

For information concerning the Institute, address New England Health Institute, State Department of Health, Hartford, Conn.

GENERAL INFORMATION

The Headquarters of the Institute and all lectures will be at Hotel Bond, 320 Asylum Street, Hartford.

Registration will be at Hotel Bond, beginning Monday morning, April 22nd, at ten o'clock, and will continue through the week.

A fee of one dollar will be charged to cover routine Institute expenses.

First lectures will begin at 2 P. M., Monday afternoon.

Three lectures will be given simultaneously each hour, nine each morning from 9:30-12:30, and nine each afternoon from 2-5. Signals will be given five minutes before each hour so that each lecture will close promptly and the next lecture begin on time.

People attending the Institute are encouraged to attend as many lectures as possible. Those who faithfully attend eighteen or more lectures during the week will be presented with a certificate of attendance.

Lectures are open to all those who are interested in public health or actively engaged in the work.

On the evening of Tuesday, April 23rd, a dinner for the Faculty of the Institute will be held at Hotel Bond. A minimum charge will be made for this event. This will be the high spot in the Institute program as it will mark the fiftieth anniversary of the Connecticut State Department of Health.

Health movies will be shown daily from 5-6.

SCHEDULE OF COURSES

I. Public Health Administration, C.-E. A. Winslow, D.P.H., Chairman.
II. Preventable Disease, M. J. Rosenau, M.D., Chairman.
III. Sanitary Engineering, James A. Newlands, B.S., Chairman.
IV. Tuberculosis, Stephen J. Maher, M.D., Chairman.
V. Venereal Diseases, Thomas Parran, Jr., M.D., Chairman.
VI. Child Hygiene, S. J. Crumbine, M.D., Chairman.
VII Public Health Nursing, Annie W. Goodrich Sc.D., Chairman.
VIII. Laboratory, Benjamin White, Ph.D., Chairman.
IX. Mental Hygiene, Roy L. Leak, M.D., Chairman.
X. Industrial Hygiene, Philip Drinker, B.S., Chairman.
XI. Foods and Food Control, Hermann C. Lythgoe, B.S., Chairman.
XII. Nutrition, Lafayette B. Mendel, Ph.D., Chairman.
XIII. Vital Statistics, Timothy F. Murphy, Ph.D., Chairman.
XIV. Health Education, Clair E. Turner, D.P.H., Chairman.

NEW ENGLAND OPHTHALMOLOGISTS CERTIFICATED BY THE AMERICAN BOARD FOR OPHTHALMIC EXAMINATIONS

JANUARY 1, 1927 TO JANUARY 1, 1929

	Year Certificated
CONNECTICUT	
Bridgeport	
DeWitt, Edw. N., 836 Myrtle Ave.	1927
Hartford	
Hogan, Walter L., 750 Main St.	1928
Smith, E. Terry, 36 Pearl St.	1928
New Haven	
Sheahan, Wm. L., Professional Bldg.	1927
MAINE	
Waterville	
Hill, Howard Foster, Professional Bldg.	1927
MASSACHUSETTS	
Boston	
Dunphy, Edwin B., 520 Commonwealth Ave.	1928
Riemer, Hugo B. C., 220 Clarendon St.	1928
Sachs, Benjamin, 483 Beacon St.	1927
Greenfield	
Millett, Frank A., 70 Riddell St.	1928
RHODE ISLAND	
Providence	
Harvey, Norman D., 112 Waterman St.	1928
VERMONT	
Burlington	
Brown, Edmund T.	1928

DR. FRANCIS X. MAHONEY APPROVES SURVEY OF STILLBIRTHS AND NEONATAL DEATHS

A letter "An Announcement and Request" appeared on page 356 in our issue of February 14. This letter was signed by a number of obstetricians and pediatricians in Boston but the name of Dr. Francis X. Mahoney, Health Commissioner of Boston, was omitted by error. The survey of stillbirths and neonatal deaths during the current year in the city of Boston is approved by Health Commissioner, Dr. Francis X. Mahoney, and he is very much interested in the study.

REMOVAL

Dr. William J. Porter has removed from Reading, Massachusetts to 32 East 30th Street, New York City.

UNITED STATES CIVIL SERVICE EXAMINATIONS

The United States Civil Service Commission announces the following open competitive examinations:

ASSOCIATE MEDICAL OFFICER
ASSISTANT MEDICAL OFFICER

Applications for associate and assistant medical officer must be on file with the Civil Service Commission at Washington, D. C., not later than June 29.

The examinations are to fill vacancies in hospitals of the Public Health Service, the Indian Service, and in other establishments of the Federal classified service throughout the United States.

Full information may be obtained from the United States Civil Service Commission, Washington, D. C., or from the secretary of the United States Civil Service Board of Examiners at the post office or custom house in any city.

REPORTS AND NOTICES OF MEETINGS

STAFF MEETING OF THE MASSACHUSETTS GENERAL HOSPITAL

A staff meeting was held at the Massachusetts General Hospital on Thursday, February 14.

Two cases were first shown. Dr. J. B. Sears, House Officer on the West Surgical Service, demonstrated a deeply jaundiced patient with a palpable mass in the right upper quadrant of the abdomen. This patient was considered to have a carcinoma of the head of the pancreas, the mass representing a distended gall bladder. Dr. A. J. Ward, House Officer on the East Surgical Service, demonstrated a case of empyema complicated by pyaemia. A large number of secondary abscesses had been drained and the patient was now convalescing satisfactorily.

The program of the evening was given by the members of the Thyroid Clinic. The discussion centered around the use of iodine in exophthalmic goiter. The talks were illustrated by numerous charts and diagrams that rendered it possible to present clearly a large amount of data in a short time.

Dr. Means, the first speaker, talked on the several uses of iodine in exophthalmic goiter. He presented an interesting table showing the evolution of the treatment of exophthalmic goiter in the Massachusetts General Hospital since the Thyroid Clinic was organized in 1919. The striking thing was the change in treatment after the introduction of iodine; the use of x-ray and of multiple stage operations was largely abandoned after the use of this drug. Among the uses of iodine, Dr. Means stressed its effectiveness in lowering basal metabolism and preparing patients for operation, its value in chronic cases of exophthalmic goiter not requiring operation, and its use in cases that showed recurrence of symptoms after operation.

Dr. P. K. Thompson discussed the effects of thyroxin in myxoedema pointing out that the effect upon basal metabolism was greatest in patients with a low metabolic level and that as the metabolic level approached normal, the effects of the drug were much less marked.

Dr. E. P. Richardson discussed the surgery of the thyroid as influenced by iodine medication. Dr. Richardson said that although the use of iodine had largely done away with the fear of a severe reaction following operation, he did not feel that these patients were as good a surgical risk as normal individuals. The patients who need the most careful consideration are: (1) patients who are highly toxic before the administration of iodine; (2) patients who do not respond well symptomatically to iodine and remain emotionally unstable although the basal metabolic rate is lowered; (3) patients who have cardiac damage. Certain of these patients, particularly if they do not take the anesthetic well, should have only a hemithyroidectomy at the first operation. In preparing patients for operation, Dr. Richardson believes they should receive full doses of iodine, since it is possible that although small doses of iodne may lower the basal metabolic level as well as larger ones, the protective action may not be so great. The iodine should be administered for 8 to 10 days previous to operation and during this time the patient should be in the hospital so that careful control may be maintained. All cases with thyrotoxicosis should receive the iodine before operation.

Dr. A. G. Brailey and Mr. E. Thorp discussed the effective dose of iodine in exophthalmic goiter. They were led to take up the study of this point by the fact that the range between beneficial doses and harmful doses of iodine is narrow. Their results seemed to show that 1 drop daily of Lugol's solution is capable of exerting as much effect on basal metabolism as the larger doses commonly employed. They are carrying out further studies on still smaller doses of this drug.

Dr. F. M. Thurman talked on low basal metabolism without myxoedema. He showed a number of healthy normal individuals having basal metabolisms of minus 20 to 25, with no signs of myxoedema syndrome.

Dr. A. E. Morris discussed the incidence of recurrence of thyrotoxicosis following subtotal thyroidectomy. Patients that having a return of symptoms and a basal metabolic rate of plus 15, were considered to have a recurrence; of the 176 cases followed, 37, or 21%, showed evidence of recurrence as thus defined. In the patients with recurrence, it was always possible to palpate thyroid tissue showing that a regeneration of thyroid tissue had taken place.

Dr. W. O. Thompson talked on the types of response to the administration of iodine shown by patients with exophthalmic goiter. The lowering of the basal metabolic level is of course well known and most striking. It is also found quite constantly that when the administration of the drug is stopped, the basal metabolism tends to rise above the level existing before the drug was used. Charts were shown illustrating the fact that patients may become refractory to iodine; if the drug be stopped for a period they will again react. Certain patients may be symptomatically much better after taking iodine although the basal metabolism is very little affected. Dr. Thompson also pointed out that in some patients after operation, symptoms of myxoedema may be produced by the administration of iodine. Finally, the effect of iodine on the same patient may vary from

time to time. Dr. Thompson discussed the bearing of these observations on the nature of the disease.

The next meeting will be held on Thursday evening, March 14th. Dr. Sidney C. Burwell, Professor of Medicine at Vanderbilt University, will talk on "Some Types of Cardiac Failure."

BOSTON ORTHOPEDIC CLUB

A meeting of the Boston Orthopedic Club will be held at the Deaconess Hospital on Monday, March 11, 1929, at 8:15 p. m.

PROGRAM

Title—"Orthopedic Problems of Diabetes."

Dr. Howard A. Root: General Outline of the Problems.

Dr. Mark H. Rogers: Sub-deltoid Bursitis. Paralysis. Toe-drop Cases.

Dr. Leland S. McKittrick: Causes and Treatment of Ulceration of Feet.

R. K. GHORMLEY, *Sec.*

BOSTON CITY HOSPITAL CLINICAL MEETING

MARCH 2, 1929

CHEEVER AMPHITHEATRE

11 A. M. to 12:30 P. M.

Dr. E. Everett O'Neil. Surgical Service. Fecal Fistula.

Dr. Francis W. Palfrey. Medical Service. Charcot Joints. Pericarditis.

Dr. Arthur R. Kimpton. Surgical Service. Demonstration and discussion of two cases of Splenectomy and one case of Salivary Calculus.

Dr. George R. Minot. Medical Service. Treatment of a case of "Secondary" Anemia.

Dr. Edwin A. Locke. Medical Service. Discussion of a case of Thoracic Disease.

Dr. Halsey B. Loder. Surgical Service. Demonstration of case of Meckel's Diverticulum.

Dr. Abraham Myerson and Dr. William G. Lennox. Neurological Service. Paper on Internal Jugular Puncture and Some Results.

Dr. William R. Morrison. Surgical Service. Acute Perforated Ulcers of the Stomach and Duodenum operated under local and Pitkin's spinal anesthesia, with and without posterior gastroenterostomy. Anastomosis of gall bladder to duodenum and drainage of common bile duct for complete destruction of common bile duct from enlarged head of pancreas. Traumatic Rupture of Spleen and Left Kidney. Splenectomy and blood transfusion.

NEW YORK ACADEMY OF MEDICINE

SECOND ANNUAL GRADUATE FORTNIGHT OF THE NEW YORK ACADEMY OE MEDICINE

The New York Academy of Medicine is making arrangements for a second series of lectures at the Academy, co-ördinated clinics, clinical demonstrations and courses in hospitals and teaching institutions of New York, on the subject of "Functional and Nervous Problems in Medicine and Surgery." The Fortnight will be held during the period October 7 to 19, 1929.

It is believed that this year's subject will attract not only the medical profession generally but also social workers and those especially interested in public welfare. The field includes those functional disturbances which have been much neglected in the last thirty years in comparison with the structural disturbances of the human body.

Evening sessions will be held at the Academy at which well-known authorities will discuss many phases of the general subject. During the mornings and afternoons specially prepared clinical programs will be presented in a number of the leading hospitals of the city. It is planned to present a full day's clinical program in each hospital co-öperating in the Fortnight. Among the special subjects which will be considered in the lectures and clinical programs are:

Sleep and insomnia.
Headache and migraine.
Endocrines and the vegetative system.
The involuntary nervous system.
General survey of visceral neurosis.
Metabolism and the vegetative nervous system.
Allergy and the nervous system.
The surgery of the vegetative system.
Traumatic neuroses
Post-operative neuroses.
The psychoneuroses.
The cardiac neuroses.
The digestive neuroses.
The vascular neuroses.
Shock.
Psychotherapy.
Hysteria.
Mental hygiene in connection with general practice.
Habit problems in children.

The profession is generally invited to attend. No fee will be charged for attendance at any of the meetings or clinics on the program.

SOCIETY MEETINGS

Combined Meetings of the Boston Medical Library, the Suffolk District Medical Society, the Middlesex South District Medical Society and the Norfolk District Medical Society (at Boston Medical Library at 8:15)

March 27, 1929—Meeting in association with Middlesex South District Medical Society. Clinical and Experimental Studies of Obstructing Jaundice and Its Complications. Dr. Waltman Walters, Mayo Clinic.

April 24, 1929—Annual meeting. Speaker, Dr. Walton Martin, New York City. Title to be announced later.

The medical profession is cordially invited to attend all these meetings.

March 2—The Boston City Hospital. Detailed notice appears elsewhere on this page.

March 11—Boston Orthopedic Club. Complete notice appears on this page.

March 14—Staff Meeting of the Massachusetts General Hospital. Complete notice appears on this page.

March 25, 26, 27—American Association for the Study of Goiter. Detailed notice appears on page 213, issue of January 24.

May 5-10—First International Congress on Mental Hygiene. Complete notice appears on page 411.

June 13—International Hospital Congress. Complete notice appears on page 212, issue of January 24.

October 7-19—New York Academy of Medicine. Detailed notice appears elsewhere on this page.

DISTRICT MEDICAL SOCIETIES

Barnstable District Medical Society

Schedule of Meetings: May 2, 1929.

Bristol North District Medical Society

April 18, 1929—Spring meeting.

Essex North District Medical Society

May 1, 1929 (Wednesday)—Annual meeting at Lawrence General Hospital, One Garden Street, Lawrence, at 12:30 P. M. (Telephone 5156.)

May 2, 1929 (Thursday)—Censors meet at Hotel Bartlett, 95 Main Street, Haverhill, at 2 P. M. (Tel. 3430.)

Candidates should present their diplomas one week in advance to the Secretary, J. Forrest Burnham, M.D., 567 Haverhill Street, Lawrence.

Essex South District Medical Society

March 6, 1929 (Wednesday)—Lynn Hospital. Clinic at 5 P. M. Dinner at 7 P. M. Symposium on Pneumonia. Speakers: Dr. Reginald Fitz, Diagnosis. Dr. Fred Lord, Treatment. Dr. William H. Robie, Heart in Pneumonia. Discussion from the floor.

RALPH E. STONE, M.D., Secretary.

Franklin District Medical Society

Meetings will be held on the second Tuesday of March and May.

Hampshire District Medical Society

March 13, 1929—Address by Dr. George E. Gage, Professor of Bacteriology and Physiology at the Massachusetts State College.

Middlesex East District Medical Society

The following schedule of meetings has been arranged for the coming year:

March—Reading.
May—Melrose.

Subjects and speakers to be arranged by committees in each city or town.

Middlesex North Medical Society

The annual meeting will be held the last Wednesday in April.

Middlesex South District Medical Society

March 27, 1929—Joint meeting with the Suffolk and Norfolk Districts.

April, 1929—Annual meeting. Definite date to be announced later.

Norfolk District Medical Society

Below are the proposed meetings of the Norfolk District Medical Society for the 1928-29 Season. The schedule below will be adhered to as strictly as possible. The carrying out of the proposed plan will, of course, depend upon the acceptances of invitations extended to the speakers. Minor changes may be necessary.

March 29—Roxbury Masonic Temple. Subject and speakers to be announced.

May—Annual meeting program to be announced.

The Censors of the Society meet May 9, 1929, at the Roxbury Masonic Temple, Warren Street, Roxbury, at 4 P M., for the examination of candidates.

Plymouth District Medical Society

March meeting at the Moore Hospital, Brockton, Mass., March 21st, program to be announced later.

April meeting at the Commercial Club, Brockton, April 18th, at 6 P. M. Annual Oration by Dr. Ralph C. McLeod, Orator; dinner.

Suffolk District Medical Society

See Combined Meetings in previous column.

Worcester District Medical Society

March 13, 1929—Worcester City Hospital. Dedication of New Nurses' Home. Speaking program to be announced.

April 10, 1929—Grafton State Hospital. Program to be announced.

May 8, 1929—Annual meeting. Worcester Country Club.

Worcester North District Medical Society

Annual meeting the fourth Tuesday in April.

BOOK REVIEWS

Methods of Biological Assay. By J. H. BURN, M.A., M.D., (Camb.). Cloth. Oxford Medical Publications. Oxford University Press. 1928. Price $2.55.

The author, who is Director of the Pharmacological Laboratory of the Pharmaceutical Society of Great Britain, in this well made, compact little volume, describes methods which he has tried and found useful for the physiological standardization of preparations of digitalis, strophanthus, squill and pituitary (posterior lobe) extract, insulin, arsenobenzene and allied substances, ergot, adrenalin, the ovarian estrus-producing hormone, parathyroid hormone, thyroid extract, anterior lobe of pituitary gland, histamine, atropine and anti-pyretics, with a discussion of the accuracy of the result. Although his methods and pharmacopeial standards differ from those in this country, this book ought to be widely and carefully read by our pharmaceutical chemists entrusted with the biologic assay of these drugs. His reasoning and his methods of evaluating the results of assays come from a sound scientific training and are to be welcomed. Although this volume is intended for actual assayers of drugs, physicians could add to their knowledge as to what really constitutes a physiologically standardized or biologically assayed drug by reading the introduction written by Professor H. H. Dale.

Qualitative and Volumetric Analysis for Medical Students. By H. LAMBOURNE, M.A., M.Sc., F.I.C., and J. A. MITCHELL, M.Sc. Cloth, Oxford Medical Publications, Oxford University Press. 1928. Price $1.50.

This text of sixty-two pages, fifteen of which are blank for notes, is intended primarily for students studying for the Pre-Medical Examination of the Conjoint Board.

Part I deals with both inorganic and organic qualitative analysis and contains schemes for examining for one metal or one acid and for the identification of ten common organic substances such as urea, glucose and formaldehyde. No theory is given. Brief instructions are included for writing formulae and equations.

Part II, entitled "Volumetric Analysis" touches on normality, gram equivalent, indicators and simple titrations. The minimum amount of theory is included and a convenient summary of titrations in table form is given.

The volume can be recommended for the purpose for which it is intended.

Diabetic Surgery. By LELAND S. MCKITTRICK AND HOWARD F. ROOT. Lea & Febiger, Publishers. 269 pages. Price $4.25.

That the diabetic with a surgical lesion offers a greater problem than most any other common type of patient, is an ever present fact in every clinic. These authors have had an unusual opportunity to combine the medical and surgical aspects of their subject, but one must have visited their clinic to realize how well fitted they are to write such a thesis. In great detail the care of these individuals is given. The blending of medicine, surgery, hygiene, physiotherapy, chiropody and nursing is admirably done. The book takes up every problem that confronts the surgeon in his care of a diabetic patient. The proper preparation, the anesthetic, the operation as indicated in each condition and the after care, even to the fitting of usable prosthetic appliances.

Much attention is given to the type of surgery necessary in conditions so frequently met, affecting the lower extremities. Detail methods of forming a definite opinion as to whether there is sufficient circulation to warrant a minor amputation or a drain-

age for sepsis are written so clearly that one should seldom make the mistake of a major amputation when a minor one would have healed, leaving a useful foot. Much has been written in the past concerning the proper drainage of infections involving the hand, but relatively little has heretofore been said about the proper drainage of the foot. A very different and difficult problem and to the mind of the reviewer represents the most helpful contribution of the entire volume.

Acute Infectious Diseases. By JAY FRANK SCHAMBERG, A.B., M.D., and JOHN A. KOLMER, M.Sc., M.D., D.P.H., D.Sc., LL.D., Second edition. Cloth Pp. 888 with 161 engravings and 27 full-page plates. Philadelphia. Lea & Febiger. 1928. $10 net.

The authors have added to the value of their praiseworthy first edition by adding chapters on the prevention of diphtheria, Vincent's angina, serum anaphylaxis, erysipelas, mumps, whooping cough, cerebrospinal meningitis, the "fourth disease" and erythema infectiosum. With its broad title and the inclusion of such relatively unimportant diseases as the "fourth disease" and erythema infectiosum one wonders why such important infectious diseases as the pneumonias, tetanus, typhoid and paratyphoid fevers, rabies and septic sore throat are omitted. Certainly they should be included in such a volume if it is to serve its full purpose as a work of reference, and it is hoped that the authors, so eminently qualified for the task by their rich experience and recognized ability, will some time give us another and more amplified edition.

The subject of smallpox and vaccination, comprising five chapters and occupying about one-third of the total pages, is treated in great detail and will admirably serve the purpose for which it was intended, and that is to supply authoritative and convincing data on this unnecessarily controversial subject. The illustrations and the plates depicting the eruptions of smallpox and the skin lesions of vaccinia and its complications are exceptionally clear and should serve as valuable diagnostic aids to the physician. It is to be regretted that in these otherwise estimable chapters the statistical tables have not been brought up to date and that the authors still recommend the older practice of using dressings to protect (?) the vaccination site.

If these chapters are to form a basis of comparison then the space given some of the other subjects would seem inadequate, but in making this criticism the reviewer appreciates the special interest of the authors in this subject and their unusual fitness for its exposition.

A rearrangement of some of the chapters by placing those describing a disease before those dealing with the means for its prevention or treatment would seem more logical than the present order.

The makeup of the book is excellent, and the number and quality of its illustrations enhance its value and usefulness. In a few places, the text is marred by signs of carelessness such as the spelling of the names Sordelli, Nikitin and Lamson, the splitting of infinitives, and the plentiful mis-setting of the "a's" particularly in the chapter on Scarlet Fever. These, however, are minor defects, and the volume is one full of authoritative, detailed and accurate information, written in a delightfully clear and readable way, and one which will be appreciated by medical students, physicians and public health workers. Its excellence inspires the wish that its authors will soon give us an even more complete edition.

Organic Laboratory Methods. By LASSAR-COHN. English translation by RALPH E. OESPER, PH.D. Cloth. Baltimore, The Williams & Wilkins Company. 1928.

The lack of original English works on laboratory methods makes the appearance of this translation a happy one, because all laboratory workers have felt the need of such a volume as this.

The book is a translation of the first volume of Lassar-Cohn's *Arbeitsmethoden für Organisch-Chemische Laboratorien* published in 1922. Those familiar with that work will need no further description of the translation. For the benefit of those not acquainted with the German edition—the chapter headings include: Starting Materials and Extraction, Baths, Distillation, Distillation under Reduced Pressure and in Vacuo, Dialysis, Passage of Vapors through Hot Tubes, Evaporation in Vacuo, Sealed Tubes, Decolorizing and Clarifying Liquids, Extraction by Means of Liquids Boiling under a Reflux, Filtering and Pressing out Precipitates, Crystallization, Solvents and Diluents, Molecular Weight Determinations, Comminuting and Mixing Substances, Melting Point Determinations, Determination of the Boiling Point of Small Quantities of Liquid, Sublimation, Drying of Solids and Dehydration of Liquids, Drying of Gases and Removal of Single Gases from Gaseous Mixtures, and Detection and Determination of Nitrogen, the Halogens and of Sulfur in Organic Compounds, the Ashing of Organic Materials.

The value of the book has been augmented by the inclusion of frequent footnotes and references to chemical literature since 1922 by the Editors, E. Emmet Reid, Roger Adams and Hans T. Clarke.

The translating has been well done—the text is readable, accurate and is well indexed.

Practical Dietetics in Health and Disease (3rd Edition), S. BLUM. F. A. Davis Co., Philadelphia, 1928. Price $4.00.

This book is composed of two parts. In the first, containing the dietary for adults in health and disease, is given the foods to eat and avoid, and the meals of a day, in a great many disorders and diseases. The foods to consume in arteriosclerosis, asthma, cancer of the stomach, colitis, diabetes, goiter, gout, heart disease, indigestion, nephritis, health, obesity, pregnancy, tuberculosis, and ulcers are given special attention. In the second part the dietary for infants and children in health and disease is described. At first the general principles of feeding healthy infants are considered; then changes in the food for children from the first to the fifteenth years; and at the end of the book the diet for sick children is taken up in detail.

The foods listed under various conditions and diseases should merely serve as a general guide, and more foods should be added or omitted according to the patient's circumstances, ability to follow a diet, and the purpose to be achieved. Special attention is called to the fact that most persons ignore a diet during health. In this edition explanatory notes and dietaries have been added to autointoxication, pernicious anemia, cancer, and high blood pressure; and the chapter on diabetes has been entirely rewritten.